This document gives pertinent information concerning the reissuance of the VPDES Permit listed below. This permit is being processed as a Minor, Municipal permit. The discharge results from the operation of a 0.0055 MGD wastewater treatment plant at a seasonal summer camp. This permit action consists of updating the proposed effluent limits to reflect the current Virginia WQS (effective January 6, 2011) and updating permit language as appropriate. The effluent limitations and special conditions contained in this permit will maintain the Water Quality Standards of 9VAC25-260 et seq.

| | | | | |
|---|---|---|---|---|
| 1. | Facility Name and Mailing Address: | Camp Red Arrow WWTP<br>22338 Arrowhead Trail<br>Stevensburg, VA 22741 | SIC Code : | 4952 WWTP |
| | Facility Location: | 22338 Arrowhead Trail<br>Stevensburg, VA 22741 | County: | Culpeper |
| | Facility Contact Name: | Cody Hoehna | Telephone Number: | (540) 825-6660 |
| | Facility Contact Title: | Environmental Systems Service Operations Manager | | |
| | Facility E-mail Address: | codyh@ss-services.com | | |
| 2. | Permit No.: | VA0092452 | Expiration Date of previous permit: | January 26, 2015 |
| | Other VPDES Permits associated with this facility: | | VAN020162 | |
| | Other Permits associated with this facility: | | None | |
| | E2/E3/E4 Status: | Not Applicable (NA) | | |
| 3. | Owner Name: | Children's Bible Ministries of Virginia, Inc. | | |
| | Owner Contact: | James Burnett | Telephone Number: | (540) 219-1742 |
| | Owner Contact Title: | Director | | |
| | Owner E-mail Address: | redarrow.email@gmail.com | | |
| 4. | Application Complete Date: | July 23, 2014 | | |
| | Permit Drafted By: | Alison Thompson | Date Drafted: | November 25, 2014 |
| | Draft Permit Reviewed By: | Anna Westernik | Date Reviewed: | December 5, 2014 |
| | Permit Review By: | Joan Crowther | Date Reviewed: | December 16, 2014 |
| | Public Comment Period : | Start Date: February 11, 2015 | End Date: | March 13, 2015 |

5. Receiving Waters Information: See Attachment 1 for the Flow Frequency Determination

| | | | |
|---|---|---|---|
| Receiving Stream Name : | Mountain Run, UT | Stream Code: | 3-XIE |
| Drainage Area at Outfall: | 0.09 sq.mi. | River Mile: | 1.4 |
| Stream Basin: | Rappahannock | Subbasin: | None |
| Section: | 4 | Stream Class: | III |
| Special Standards: | None | Waterbody ID: | VAN-E09R |
| 7Q10 Low Flow: | 0.0 MGD | 7Q10 High Flow: | 0.0 MGD |
| 1Q10 Low Flow: | 0.0 MGD | 1Q10 High Flow: | 0.0 MGD |
| 30Q10 Low Flow: | 0.0 MGD | 30Q10 High Flow: | 0.0 MGD |
| Harmonic Mean Flow: | 0.0 MGD | 30Q5 Flow: | 0.0 MGD |

6. Statutory or Regulatory Basis for Special Conditions and Effluent Limitations:

| | | | |
|---|---|---|---|
| X | State Water Control Law | X | EPA Guidelines |
| X | Clean Water Act | X | Water Quality Standards |
| X | VPDES Permit Regulation | | Other |
| X | EPA NPDES Regulation | | |

7. Licensed Operator Requirements: Class III

8. Reliability Class: Class II

9. Permit Characterization:

| | | | | | |
|---|---|---|---|---|---|
| X | Private | X | Effluent Limited | | Possible Interstate Effect |
| | Federal | X | Water Quality Limited | | Compliance Schedule Required |
| | State | | Whole Effluent Toxicity Program Required | | Interim Limits in Permit |
| | POTW | | Pretreatment Program Required | | Interim Limits in Other Document |
| X | TMDL | | e-DMR Participant | | |

**10. Wastewater Sources and Treatment Description:**

This system serves a bible camp for children with an estimated maximum population of 200 campers per day with 20 staff per day. The camp operates during summer months and several weekends during the year. The site has a camp office, check-in building, three cabins, dining hall, nurse's station, bath house, swimming pool and pool pump house. The wastewater system consists of a grease trap, three primary settling tanks, two 3,000 gallon Delta Environmental Model Biopod Fixed Film Aerobic Treatment Units, two single pass sand filters, six Salcor Ultraviolet Radiation Disinfection Units, and a Re-aeration chamber. The effluent discharges to the unnamed tributary to Mountain Run.

The Certificate to Construct was issued on March 29, 2010 with the Certificate to Operate issued on June 15, 2012. A copy of the CTO is found in Attachment 2.

See Attachment 3 for a facility schematic/diagram.

**TABLE 1 – Outfall Description**

| Outfall Number | Discharge Sources | Treatment | Design Flow(s) | Outfall Latitude and Longitude* |
|---|---|---|---|---|
| 001 | Domestic Wastewater | See Item 10 above. | 0.0055 MGD | **38° 26' 37.4" N**<br>**77° 50' 39.8" W** |
| See Attachment 4 for (Germanna Bridge, DEQ #184A) topographic map. | | | | |

* The latitude and longitude in the permit application are slightly different that what are presented here. These coordinates were established by DEQ's Planning Staff.

**11. Sludge Treatment and Disposal Methods:**

Sludge will be pumped periodically and hauled offsite by an approved hauler to the Remington Wastewater Treatment Facility (VA0076805), for further treatment and disposal.

**12. Discharges, Intakes, Monitoring Stations, Other Items in Vicinity of Discharge**

| TABLE 2 – Other Items | |
|---|---|
| 3-MTN000.59 | DEQ Ambient and Biological Monitoring Station located on Mountain Run at the Rt. 620 Bridge crossing, approximately 9.7 miles downstream of the outfall. |
| 3-MTN003.31 | Freshwater Probabilistic Monitoring Station downstream from Rt. 672. |
| 3-MTN005.79 | Fish Tissue/Sediment Station at Rt. 620/672. |

**13. Material Storage:**

| TABLE 3 - Material Storage | | |
|---|---|---|
| **Materials Description** | **Volume Stored** | **Spill/Stormwater Prevention Measures** |
| There are no materials stored onsite. | | |

**14. Site Inspection:**

Performed by Susan Oakes on February 11, 2009 (see Attachment 5).

**15. Receiving Stream Water Quality and Water Quality Standards:**

a. Ambient Water Quality Data

This facility discharges into an unnamed tributary to Mountain Run that has not been monitored or assessed. Mountain Run (MTN) is located approximately 1.4 miles downstream from Outfall 001. The following is the water quality summary for this segment of Mountain Run, as taken from the 2012 Integrated Report:

*There are no DEQ monitoring stations located in this segment of the Mountain Run.*

*The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The aquatic life is impaired based on benthic monitoring along neighboring assessment units. An observed effect is noted for the aquatic life use based on one exceedance of the consensus based probable effects concentration (PEC) sediment screening values for chlordane (17.6 ppb, dry weight). The wildlife use is considered fully supporting. The recreation use was not assessed.*

The nearest downstream DEQ monitoring stations are located within a segment of Mountain Run that begins approximately 2.8 miles downstream from Outfall 001. DEQ fish tissue/sediment station 3-MTN005.79 is located at Route 620/672, approximately 4.6 miles downstream from Outfall 001 and ambient and biological monitoring station 3-MTN000.59 is located at Route 620, approximately 9.8 miles downstream from Outfall 001. The following is the water quality summary for this segment of Mountain Run, as taken from the 2012 Integrated Report:

*The following DEQ monitoring stations are located in this segment of Mountain Run:*

- *fish tissue/sediment station 3-MTN005.79, at Route 620/672*
- *ambient and biological monitoring station 3-MTN000.59, at Route 620*

*The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory and fish tissue monitoring data. SPMD deployment at station 3-MTN003.31, in 2003, also resulted in one sample with a concentration above the surface water criterion for total PCBs of 640 pg/L, noted by an observed effect.*

*E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. A fecal coliform TMDL for the Mountain Run watershed has been submitted and approved.*

*Benthic macroinvertebrate biological monitoring finds the aquatic life use to be not supported. Additionally, the aquatic life use is noted with an observed effect, as an excursion of the consensus PEC freshwater sediment screening value (SV) of 128 parts per million (ppm, dry weight) for lead (Pb) in sediment was recorded from a sediment sample collected in 2003 at monitoring station 3-MTN003.31. This observed effect is will be carried over.*

*The wildlife use is considered fully supporting.*

b. 303(d) Listed Stream Segments and Total Maximum Daily Loads (TMDLs)

**TABLE 4 – Information on Downstream 303(d) Impairments and TMDLs**

| Waterbody Name | Impaired Use | Cause | Distance From Outfall | TMDL completed | WLA | Basis for WLA | TMDL Schedule |
|---|---|---|---|---|---|---|---|
| ***Impairment Information in the 2012 Integrated Report*** | | | | | | | |
| Mountain Run | Aquatic Life | Benthic Macroinvertebrates | 1.4 miles | No | --- | --- | 2020 |
| | Fish Consumption | PCBs | | No | --- | --- | 2018 |
| | Recreation | *E. coli* | 2.8 miles | Mountain Run Watershed Bacteria 4/27/2001 | 9.57E+09 cfu/year *E. coli* | 126 cfu/100 ml *E. coli* --- 0.0055 MGD | --- |

Significant portions of the Chesapeake Bay and its tributaries are listed as impaired on Virginia's 303(d) list of impaired waters for not meeting the aquatic life use support goal, and the draft 2012 Virginia Water Quality Assessment 305(b)/303(d) Integrated Report indicates that much of the mainstem Bay does not fully support this use support goal under Virginia's Water Quality Assessment guidelines. Nutrient enrichment is cited as one of the primary causes of impairment. EPA issued the Bay TMDL on December 29, 2010. It was based, in part, on the Watershed Implementation Plans developed by the Bay watershed states and the District of Columbia.

The Chesapeake Bay TMDL addresses all segments of the Bay and its tidal tributaries that are on the impaired waters list. As with all TMDLs, a maximum aggregate watershed pollutant loading necessary to achieve the Chesapeake Bay's water quality standards has been identified. This aggregate watershed loading is divided among the Bay states and their major tributary basins, as well as by major source categories [wastewater, urban storm water, onsite/septic agriculture, air deposition]. Fact Sheet Section 17.e provides additional information on specific nutrient monitoring for this facility to implement the provisions of the Chesapeake Bay TMDL.

The planning statement is found in Attachment 6.

c. Receiving Stream Water Quality Criteria

Part IX of 9VAC25-260(360-550) designates classes and special standards applicable to defined Virginia river basins and sections. The receiving stream, Mountain Run, UT, is located within Section 4 of the Rappahannock River Basin, and classified as a Class III water.

At all times, Class III waters must achieve a dissolved oxygen (D.O.) of 4.0 mg/L or greater, a daily average D.O. of 5.0 mg/L or greater, a temperature that does not exceed 32°C, and maintain a pH of 6.0-9.0 standard units (S.U.).

The Freshwater Water Quality/Wasteload Allocation Analysis (Attachment 7) details other water quality criteria applicable to the receiving stream.

Some Water Quality Criteria are dependent on the temperature and pH and Total Hardness of the stream and final effluent. The pH and temperature values used as part of Attachment 7 are as follows:

pH and Temperature for Ammonia Criteria:
The fresh water, aquatic life Water Quality Criteria for Ammonia are dependent on the instream temperature and pH. Since the effluent may have an impact on the instream values, the temperature and pH values of the effluent must also be considered when determining the ammonia criteria for the receiving stream. The 90th percentile temperature and pH values are used because they best represent the critical design conditions of the receiving stream.

Since the 7Q10 and 1Q10 of the receiving stream are 0.0 MGD, effluent pH data may be used to establish the ammonia water quality criteria. Staff has reviewed the available effluent data (May 2013 through October 2014) for pH and finds that the 90$^{th}$ percentile pH of the effluent (8.3 S.U.) is higher than the default (7.5 S.U.) used during the issuance of the permit in 2009.

Therefore, the actual 90th percentile pH value shall be used to establish the ammonia criteria. The pH data is also found as part of Attachment 7. There are no effluent temperature values, so default temperature values of 25°C annual and 15°C wet were used to calculate the ammonia water quality criteria. The ammonia water quality standards calculations are shown in Attachment 7.

Total Hardness for Hardness-Dependent Metals Criteria:
The Water Quality Criteria for some metals are dependent on the receiving stream's total hardness (expressed as mg/L calcium carbonate) as well as the total hardness of the final effluent. Since critical flows are zero, effluent hardness can be used to establish the criteria.

There is no hardness data for this facility or receiving stream. Staff guidance suggests using a default hardness value of 50 mg/L CaCO3 for streams east of the Blue Ridge. The hardness-dependent metals criteria in Attachment 7 are based on this default value.

Bacteria Criteria:
The Virginia Water Quality Standards at 9VAC25-260-170A state that the following criteria shall apply to protect primary recreational uses in surface waters:

*E. coli* bacteria per 100 ml of water shall not exceed a monthly geometric mean of the following:

| | Geometric Mean[1] |
|---|---|
| Freshwater *E. coli* (N/100 ml) | 126 |

[1]For a minimum of four weekly samples [taken during any calendar month].

d. Receiving Stream Special Standards

The State Water Control Board's Water Quality Standards, River Basin Section Tables (9VAC25-260-360, 370 and 380) designates the river basins, sections, classes, and special standards for surface waters of the Commonwealth of Virginia. The receiving stream, Mountain Run, UT, is located within Section 4 of the Rappahannock Basin. This section has been designated with no special standards.

e. Threatened or Endangered Species
The Virginia DGIF Fish and Wildlife Information System Database was searched on July 30, 2014 for records to determine if there are threatened or endangered species in the vicinity of the discharge. No threatened or endangered species were identified The limits proposed in this draft permit are protective of the Virginia Water Quality Standards and would protect the threatened and endangered species found near the discharge. The database search is found in Attachment 8.

The Virginia Department of Conservation and Recreation requested coordination with this permit reissuance. They had no objections to the reissuance and their response is found in Attachment 9.

The Virginia Department of Game and Inland Fisheries requested coordination with this permit reissuance. They had no objections to the reissuance and their response is found in Attachment 10.

The U.S. Fish & Wildlife Service Virginia Field Office requested coordination with this permit reissuance. They had no objections to the reissuance and their response is found in Attachment 11.

**16. Antidegradation (9VAC25-260-30):**

All state surface waters are provided one of three levels of antidegradation protection. For Tier 1 or existing use protection, existing uses of the water body and the water quality to protect these uses must be maintained. Tier 2 water bodies have water quality that is better than the water quality standards. Significant lowering of the water quality of Tier 2 waters is not allowed without an evaluation of the economic and social impacts. Tier 3 water bodies are exceptional waters and are so designated by regulatory amendment. The antidegradation policy prohibits new or expanded discharges into exceptional waters.

The receiving stream has been classified as Tier 1 based on an evaluation of the receiving stream characteristics. The critical flows for the stream are zero and at times the stream flow is comprised of only effluent. It is staff's best professional judgment that such streams are Tier 1. Permit limits proposed have been established by determining wasteload allocations which will result in attaining and/or maintaining all water quality criteria which apply to the receiving stream, including narrative criteria. These wasteload allocations will provide for the protection and maintenance of all existing uses.

**17. Effluent Screening, Wasteload Allocation, and Effluent Limitation Development:**

To determine water quality-based effluent limitations for a discharge, the suitability of data must first be determined. Data is suitable for analysis if one or more representative data points is equal to or above the quantification level ("QL") and the data represent the exact pollutant being evaluated.

Next, the appropriate Water Quality Standards (WQS) are determined for the pollutants in the effluent. Then, the Wasteload Allocations (WLA) are calculated. In this case since the critical flows 7Q10 and 1Q10 have been determined to be zero, the WLA's are equal to the WQS. The WLA values are then compared with available effluent data to determine the need for effluent limitations. Effluent limitations are needed if the 97th percentile of the daily effluent concentration values is greater than the acute wasteload allocation or if the 97th percentile of the four-day average effluent concentration values is greater than the chronic wasteload allocation. Effluent limitations are based on the most limiting WLA, the required sampling frequency, and statistical characteristics of the effluent data.

a. Effluent Screening:
Effluent data obtained from the submitted Discharge Monitoring Reports (DMRs) has been reviewed and determined to be suitable for evaluation. Effluent data were reviewed, and there was one TKN monthly average exceedance (3.4 mg/L) in August 2014. There have been no other exceedances of the established limitations. The following pollutants require a wasteload allocation analysis: Ammonia as N.

b. Mixing Zones and Wasteload Allocations (WLAs):

Wasteload allocations (WLAs) are calculated for those parameters in the effluent with the reasonable potential to cause an exceedance of water quality criteria. The basic calculation for establishing a WLA is the steady state complete mix equation:

$$WLA = \frac{Co[Qe + (f)(Qs)] - [(Cs)(f)(Qs)]}{Qe}$$

Where:
- WLA = Wasteload allocation
- Co = In-stream water quality criteria
- Qe = Design flow
- Qs = Critical receiving stream flow (1Q10 for acute aquatic life criteria; 7Q10 for chronic aquatic life criteria; 30Q10 for ammonia criteria; harmonic mean for carcinogen-human health criteria; and 30Q5 for non-carcinogen human health criteria)
- f = Decimal fraction of critical flow
- Cs = Mean background concentration of parameter in the receiving stream.

The water segment receiving the discharge via Outfall 001 is considered to have a 7Q10, 30Q10, and 1Q10 of 0.0 MGD. As such, there is no mixing zone and the WLA is equal to the Co.

c. Effluent Limitations Toxic Pollutants, Outfall 001 –

9VAC25-31-220.D. requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Those parameters with WLAs that are near effluent concentrations are evaluated for limits.

The VPDES Permit Regulation at 9VAC25-31-230.D requires that monthly and weekly average limitations be imposed for continuous discharges from POTWs and monthly average and daily maximum limitations be imposed for all other continuous non-POTW discharges.

1) Ammonia as N/TKN:

With the 2010 issuance of this VPDES permit, the facility was given a TKN monthly average limitation of 3.0 mg/L based on the receiving stream characteristics. The weekly average limit was established as 4.5 mg/L based on a multiplier of 1.5 times the monthly average. A TKN limit of 3.0 mg/L assumes that the remaining nitrogen is in the form of refractory organic compounds that will not be easily oxidized and that ammonia is removed when this limit is maintained; therefore, a limit for Ammonia as N is not necessary. The current statistical evaluation (Attachment 12) suggests an ammonia monthly average limitation of 1.6 mg/L; it is staff's best professional judgment that the TKN limitation of 3.0 mg/L is protective and shall be carried forward with this reissuance.

Also, the Environmental Protection Agency (EPA) finalized new, more stringent ammonia criteria in August 2013; possibly resulting in significant reductions in ammonia effluent in NPDES Discharge Permits. It is staff's best professional judgment that incorporation of these criteria into the Virginia Water Quality Standards is forthcoming. This and many other facilities may be required to comply with these new criteria during their next respective permit terms, so any minor changes in the Ammonia as N or TKN effluent limitations would be counterproductive to the new EPA ammonia criteria. Once the new criteria are adopted, staff will re-evaluate the existing TKN limitations.

2) Total Residual Chlorine:

Total Residual Chlorine limits were established during the issuance of the permit since the facility was not constructed and a method of disinfection has not been selected. The facility is now operational and utilizes Ultraviolet Disinfection; therefore, Total Chlorine Residual limitations are not necessary and shall be removed with this reissuance.

d. Effluent Limitations and Monitoring, Outfall 001 – Conventional and Non-Conventional Pollutants

No changes to dissolved oxygen (D.O.), carbonaceous biochemical oxygen demand-5 day ($CBOD_5$), total suspended solids (TSS), Total Kjeldahl Nitrogen (TKN), and pH limitations are proposed.

$CBOD_5$, TSS, Dissolved Oxygen, and TKN limitations are based on best professional judgment and Guidance Memo 00-2011. This guidance is applicable to waters such as this portion of Mountain Run, UT, where the flow is intermittent, and the waters cannot be modeled.

*E. coli* limitations are in accordance with the Water Quality Standards at 9VAC25-260-170.

e. Effluent Annual Average Limitations and Monitoring, Outfall 001 – Nutrients
VPDES Regulation 9VAC25-31-220(D) requires effluent limitations that are protective of both the numerical and narrative water quality standards for state waters, including the Chesapeake Bay. As discussed in Section 15, significant portions of the Chesapeake Bay and its tributaries are listed as impaired with nutrient enrichment cited as one of the primary causes. Virginia has committed to protecting and restoring the Bay and its tributaries.

Pursuant to § 62.1-44.19:15.A.5, this facility has zero allocation for Total Nitrogen and/or Total Phosphorus loadings and was not authorized to discharge until the permittee demonstrated to the DEQ that he has acquired waste load allocations sufficient to offset his delivered Total Nitrogen and delivered Total Phosphorus loads. Therefore, this permit reissuance does not contain Total Nitrogen and/or Total Phosphorus effluent concentrations.

This facility has also obtained coverage under 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia.* This regulation specifies and controls the nitrogen and phosphorus loadings from facilities and specifies facilities that must register under the general permit. This facility has coverage under this General Permit; the permit number is VAN020162. Because this facility has zero allocation for Total Nitrogen and/or Total Phosphorus loadings, an offset plan was provided to DEQ prior to the Certificate to Construct (CTC) application and is be included in the General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation For Total Nitrogen And Total Phosphorus Discharges And Nutrient Trading In The Chesapeake Bay Watershed. The offset plan was submitted and approved by DEQ. A copy of the Chesapeake Bay Nutrient Offset Agreement between Culpeper County and Camp Red Arrow is found in Attachment 13.

Nonsignificant dischargers are subject to aggregate wasteload allocations for Total Nitrogen (TN), Total Phosphorus (TP), and Sediments under the Total Maximum Daily Load (TMDL) for the Chesapeake Bay. Monitoring for TN, TP and TSS is required in order to verify the aggregate wasteload allocations. Monitoring for Total Nitrogen, Nitrate+Nitrite, and Total Phosphorus was added to the permit with this reissuance.

f. Effluent Limitations and Monitoring Summary:

The effluent limitations are presented in the following table. Limits were established for Flow, $CBOD_5$, Total Suspended Solids, Total Kjeldahl Nitrogen, pH, Dissolved Oxygen, and *E. coli*. Monitoring was established for Flow, Total Nitrogen, Total Phosphorus, and Nitrate+Nitrite. The mass loading (kg/d) for monthly and weekly averages were calculated by multiplying the concentration values (mg/L), with the flow values (in MGD) and a conversion factor of 3.785.

Sample Type and Frequency are in accordance with the recommendations in the VPDES Permit Manual.

The VPDES Permit Regulation at 9VAC25-31-30 and 40 CFR Part 133 require that the facility achieve at least 85% removal for CBOD and TSS (or 65% for equivalent to secondary). The limits in this permit are water-quality-based effluent limits and result in greater than 85% removal.

**18. Antibacksliding:**

All limits in this permit are at least as stringent as those previously established. Backsliding does not apply to this reissuance.

Total Residual Chlorine limits were established during the issuance of the permit since the facility was not constructed and a method of disinfection has not been selected. The facility is now operational and utilizes Ultraviolet Disinfection; therefore, Total Chlorine Residual limitations are not necessary and shall be removed with this reissuance.

**19. Effluent Limitations/Monitoring Requirements:**

Design flow is 0.0055 MGD.

Effective Dates: During the period beginning with the permit's effective date and lasting until the expiration date.

| PARAMETER | BASIS FOR LIMITS | DISCHARGE LIMITATIONS | | | | MONITORING REQUIREMENTS | |
|---|---|---|---|---|---|---|---|
| | | Monthly Average | Weekly Average | Minimum | Maximum | Frequency | Sample Type |
| Flow (MGD) | NA | NL | NA | NA | NL | 1/D | Estimate |
| pH | 3 | NA | NA | 6.0 S.U. | 9.0 S.U. | 1/D | Grab |
| $CBOD_5$ | 2, 3 | 10 mg/L 0.21 kg/day | 15 mg/L 0.31 kg/day | NA | NA | 1/M | Grab |
| Total Suspended Solids (TSS)[a] | 2, 3 | 10 mg/L 0.21 kg/day | 15 mg/L 0.31 kg/day | NA | NA | 1/M | Grab |
| Dissolved Oxygen (DO) | 3 | NA | NA | 6.0 mg/L | NA | 1/D | Grab |
| Total Kjeldahl Nitrogen (TKN) | 2, 3 | 3.0 mg/L 0.06 kg/day | 4.5 mg/L 0.09 kg/day | NA | NA | 1/M | Grab |
| *E. coli* (Geometric Mean)[b] | 3 | 126 n/100mls | NA | NA | NA | 1/W | Grab |
| Nitrate+Nitrite, as N | 3, 5 | NL mg/L | NA | NA | NA | 1/YR | Grab |
| Total Nitrogen[c] | 3, 5 | NL mg/L | NA | NA | NA | 1/YR | Calculated |
| Total Phosphorus | 3, 5 | NL mg/L | NA | NA | NA | 1/YR | Grab |

The basis for the limitations codes are:

1. Federal Effluent Requirements
2. Best Professional Judgment
3. Water Quality Standards
4. DEQ Disinfection Guidance
5. Guidance Memo GM14-2011

*MGD* = Million gallons per day.
*NA* = Not applicable.
*NL* = No limit; monitor and report.
*S.U.* = Standard units.

*1/D* = Once every day.
*1/W* = Once every week.
*1/M* = Once every month.
*1/YR* = Once every calendar year.

Estimate = Reported flow is to be based on the technical evaluation of the sources contributing to the discharge.

Grab= An individual sample collected over a period of time not to exceed 15 minutes.

a. TSS shall be expressed as two significant figures.
b. Samples shall be collected between 10:00 a.m. and 4:00 p.m.
c. Total Nitrogen is the sum of Total Kjeldahl Nitrogen and $NO_2$+$NO_3$ Nitrogen and shall be calculated from the results of those tests.

**20. Other Permit Requirements:**

a. Part I.B. of the permit contains quantification levels and compliance reporting instructions.

9VAC25-31-190.L.4.c. requires an arithmetic mean for measurement averaging and 9VAC25-31-220.D requires limits be imposed where a discharge has a reasonable potential to cause or contribute to an in-stream excursion of water quality criteria. Specific analytical methodologies for toxics are listed in this permit section as well as quantification levels (QLs) necessary to demonstrate compliance with applicable permit limitations or for use in future evaluations to determine if the pollutant has reasonable potential to cause or contribute to a violation. Required averaging methodologies are also specified.

**21. Other Special Conditions:**

a. **95% Capacity Reopener.** The VPDES Permit Regulation at 9VAC25-31-200.B.4 requires all POTWs and PVOTWs develop and submit a plan of action to DEQ when the monthly average influent flow to their sewage treatment plant reaches 95% or more of the design capacity authorized in the permit for each month of any three consecutive month period. The facility is a PVOTW.

b. **Indirect Dischargers.** Required by VPDES Permit Regulation, 9VAC25-31-200 B.1 and B.2 for POTWs and PVOTWs that receive waste from someone other than the owner of the treatment works.

c. **O&M Manual Requirement.** Required by Code of Virginia §62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790; VPDES Permit Regulation, 9VAC25-31-190.E. The permittee shall maintain a current Operations and Maintenance (O&M) Manual. The permittee shall operate the treatment works in accordance with the O&M Manual and shall make the O&M Manual available to Department personnel for review upon request. Any changes in the practices and procedures followed by the permittee shall be documented in the O&M Manual within 90 days of the effective date of the

changes. Non-compliance with the O&M Manual shall be deemed a violation of the permit.

d. **CTC, CTO Requirement.** The Code of Virginia § 62.1-44.19; Sewage Collection and Treatment Regulations, 9VAC25-790 requires that all treatment works treating wastewater obtain a Certificate to Construct prior to commencing construction and to obtain a Certificate to Operate prior to commencing operation of the treatment works.

e. **Licensed Operator Requirement.** The Code of Virginia at §54.1-2300 et seq. and the VPDES Permit Regulation at 9VAC25-31-200 C, and by the Board for Waterworks and Wastewater Works Operators and Onsite Sewage System Professionals Regulations (18VAC160-20-10 et seq.) requires licensure of operators. This facility requires a Class III operator.

f. **Reliability Class.** The Sewage Collection and Treatment Regulations at 9VAC25-790 require sewage treatment works to achieve a certain level of reliability in order to protect water quality and public health consequences in the event of component or system failure. Reliability means a measure of the ability of the treatment works to perform its designated function without failure or interruption of service. The facility is required to meet a reliability Class of II.

g. **Water Quality Criteria Reopener.** The VPDES Permit Regulation at 9VAC25-31-220 D. requires establishment of effluent limitations to ensure attainment/maintenance of receiving stream water quality criteria. Should effluent monitoring indicate the need for any water quality-based limitations, this permit may be modified or alternatively revoked and reissued to incorporate appropriate limitations.

h. **Sludge Reopener.** The VPDES Permit Regulation at 9VAC25-31-220.C requires all permits issued to treatment works treating domestic sewage (including sludge-only facilities) include a reopener clause allowing incorporation of any applicable standard for sewage sludge use or disposal promulgated under Section 405(d) of the CWA.

i. **Sludge Use and Disposal.** The VPDES Permit Regulation at 9VAC25-31-100.P; 220.B.2, and 420 through 720, and 40 CFR Part 503 require all treatment works treating domestic sewage to submit information on their sludge use and disposal practices and to meet specified standards for sludge use and disposal. The facility includes a treatment works treating domestic sewage.

j. **Treatment Works Closure Plan.** This condition establishes the requirement to submit a closure plan for the treatment works if the treatment facility is being replaced or is expected to close. This is necessary to ensure treatment works are properly closed so that the risk of untreated waste water discharge, spills, leaks and exposure to raw materials is eliminated and water quality maintained. Section §62.1-44.21 requires every owner to furnish when requested plans, specification, and other pertinent information as may be necessary to determine the effect of the wastes from his discharge on the quality of state waters, or such other information as may be necessary to accomplish the purpose of the State Water Control Law.

k. **Nutrient Offsets**. The Virginia General Assembly, in their 2005 session, enacted a new Article 4.02 (Chesapeake Bay Watershed Nutrient Credit Exchange Program) to the Code of Virginia to address nutrient loads to the Bay. Section 62.1-44.19:15 sets forth the requirements for new and expanded dischargers, which are captured by the requirements of the law, including the requirement that non-point load reductions acquired for the purpose of offsetting nutrient discharges be enforced through the individual VPDES permit.

l. **Nutrient Reopener.** 9VAC25-40-70 A authorizes DEQ to include technology-based annual concentration limits in the permits of facilities that have installed nutrient control equipment, whether by new construction, expansion or upgrade. 9VAC25-31-390 A authorizes DEQ to modify VPDES permits to promulgate amended water quality standards.

m. **TMDL Reopener.** This special condition is to allow the permit to reopened if necessary to bring it in compliance with any applicable TMDL that may be developed and approved for the receiving stream.

**22. Permit Section Part II.**

Required by VPDES Regulation 9VAC25-31-190, Part II of the permit contains standard conditions that appear in all VPDES Permits. In general, these standard conditions address the responsibilities of the permittee, reporting requirements, testing procedures and records retention.

**23. Changes to the Permit from the Previously Issued Permit:**

a. Special Conditions:
1) The Nutrient Offsets and Nutrient Reopener Special Conditions were added to the permit.

b. Monitoring and Effluent Limitations:
1) Total Residual Chlorine limits were established during the issuance of the permit since the facility was not constructed and a method of disinfection has not been selected. The facility is now operational and utilizes Ultraviolet Disinfection; therefore, Total Chlorine Residual limitations are not necessary and shall be removed with this reissuance.
2) Monitoring for Total Nitrogen, Nitrate+Nitrite, and Total Phosphorus was included with this reissuance in accordance with Guidance Memorandum GM14-2011.

**24. Variances/Alternate Limits or Conditions:**

There are no variances or alternate limits or condition established in this draft permit.

**25. Public Notice Information:**

First Public Notice Date: February 11, 2015 Second Public Notice Date: February 18, 2015

Public Notice Information is required by 9VAC25-31-280 B. All pertinent information is on file and may be inspected, and copied by contacting the: DEQ Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193, Telephone No. (703) 583-3834, Alison.Thompson@deq.virginia.gov. See Attachment 14 for a copy of the public notice document.

Persons may comment in writing or by email to the DEQ on the proposed permit action, and may request a public hearing, during the comment period. Comments shall include the name, address, and telephone number of the writer and of all persons represented by the commenter/requester, and shall contain a complete, concise statement of the factual basis for comments. Only those comments received within this period will be considered. The DEQ may decide to hold a public hearing, including another comment period, if public response is significant and there are substantial, disputed issues relevant to the permit. Requests for public hearings shall state 1) the reason why a hearing is requested; 2) a brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit; and 3) specific references, where possible, to terms and conditions of the permit with suggested revisions. Following the comment period, the Board will make a determination regarding the proposed permit action. This determination will become effective, unless the DEQ grants a public hearing. Due notice of any public hearing will be given. The public may request an electronic copy of the draft permit and fact sheet or review the draft permit and application at the DEQ Northern Regional Office by appointment.

**26. Additional Comments:**

Previous Board Action(s): There are no previous board actions.

Staff Comments: Staff has no additional comments.

Public Comment: No comments were received during the public notice.

# MEMORANDUM

**TO:** VPDES Permit File – VPDES Permit No. VA0092452

**FROM:** Susan A. Oakes

**SUBJECT:** Camp Red Arrow Wastewater Treatment Plant Flow Determination Memo

**DATE:** March 19, 2009

A VPDES Permit Application was received from Children's Bible Ministries of Virginia, Inc. requesting the issuance of a VPDES permit for a proposed 0.0055 MGD wastewater treatment plant to serve a bible camp for children. The camp expects 100 campers per day with a maximum population of 200 campers per day and a staff of 20.

The proposed discharge point has a drainage area of approximately 0.09 square miles or 60.6 acres. Upstream from the proposed discharge point is an open field. The proposed discharge point is to a dry ditch close to the edge of the property. Due to this observation made during the site visit on February 11, 2009 and the fact that critical flows of drainage areas of less than five (5) square miles are typically zero, all critical flows for the 7Q10 and 1Q10 of the receiving stream (i.e., the dry ditch), have been determined to be 0.0 MGD.

Attachment 1

# COMMONWEALTH of VIRGINIA

*DEPARTMENT OF ENVIRONMENTAL QUALITY*
NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800 Fax (703) 583-3821
www.deq.virginia.gov

Douglas W. Domenech
:cretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

June 15, 2012

Culpeper County
Camp Red Arrow
PTL#25624, Permit VA0092452

Mr. Thomas Burnett
Children's Bible Ministries of Virginia
PO Box 932
Madison, VA 22727

RE: Certificate to Operate VA0092452 Camp Red Arrow WWTP

Dear Mr. Burnett:

In accordance with 9VAC25-790-190 of the Commonwealth of Virginia's *Sewage Collection and Treatment Regulations*, this letter transmits the Certificate to Operate (CTO) for Camp Red Arrow located in Culpeper County. The CTO is being issued based on the Application for Certificate to Operate dated May 25, 2012, and received by this office on May 29, 2012 with additional information on the Total Nitrogen and Total Phosphorus Offsets received on June 12, 2012.

Please be advised that you are required to obtain coverage under 9VAC25-820 *General Virginia Pollutant Discharge Elimination System (VPDES) Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia.* This regulation specifies and controls the nitrogen and phosphorus loadings from facilities and specifies facilities that must register under the general permit. Failure to apply for coverage under this general permit could result in the facility being referred to the regional compliance and enforcement staff for further action. The necessary forms for application for this general permit, *i.e.* the registration statement and permit fee form, can be obtained from DEQ's website at: http://www.deq.virginia.gov/Programs/Water/PermittingCompliance/PollutionDischargeElimination/PermitsFees.aspx#gps. Please forward the necessary documents as soon as possible, but no later than June 29, 2012 to:

Allan Brockenbrough II, P.E.
Nutrient Trading Coordinator
Virginia Department of Environmental Quality
P.O. Box 1105
Richmond, VA 23218

Culpeper County
Camp Red Arrow
PTL#25624, Permit VA0092452

In addition to the monitoring specified in VA0092452, you will also need to begin monitoring for Total Phosphorus and Nitrate+Nitrite upon commencement of discharge at a frequency of 1/Month as a grab sample. Once your general permit is issued, these parameters plus TKN and your daily flow data will be used to complete the Discharge Monitoring Reports for the general permit.

If you have any questions about this letter or the approval process, please contact me at (703)-583-3834 or alison.thompson@deq.virginia.gov.

Respectfully,

Alison Thompson
Water Permits Technical Reviewer

cc: VPDES Permit File VA0092452
VDH District Office, attn: Environmental Health Manager
Culpeper County Local Building Official
Thomas Basham, Nokesville Design, PO Box 635, Nokesville, VA 20182
Allan Brockenbrough – DEQ-CO
Rebecca Vice – DEQ-NRO Compliance Auditor

Attachment: CTO

**Department of Environmental Quality**
**APPLICATION for CERTIFICATE TO OPERATE**
**Under the Sewage Collection and Treatment Regulations 9 VAC 25-790**
**and/or the Water Reclamation and Reuse Regulation 9 VAC 25-740**

See instructions. Submit 1 copy of this form and any attachments. Form will expand as you enter information.

| | |
|---|---|
| Project Title: (as it appears on plans) RED ARROW CAMP<br>P.E. Seal Date on Cover: 03/15/10<br>Specifications Title and Date: SEWAGE TREATMENT AND DISPOSAL PLAN, 3/15/10 | |
| Location of Project:19273 MULFORD CAMP ROAD | County/City: CULPEPER COUNTY |
| Receiving Wastewater Collection System(s): N/A | |
| Receiving Sewage Treatment Plant(s): N/A | |
| **PROJECT OWNER:** | **RESPONSIBLE ENGINEER** |
| Name & Title: CHILDRENS BIBLE MINISTRIES OF VA | Name: D. THOMAS BASHAM PE |
| Signature and Date: C. Ryutz 5-23-12 | Company Name: NOKESVILLE DESIGN, PLC |
| Address: PO BOX 932<br>MADISON, VA 22727 | Address: PO BOX 635<br>NOKESVILLE, VA 20182 |
| Phone: 540-407-0703 | Phone: 571-238-0291 |
| Email: ceprryutz@juno.com | Email: TOM@NOKESVILLEDESIGN.COM |

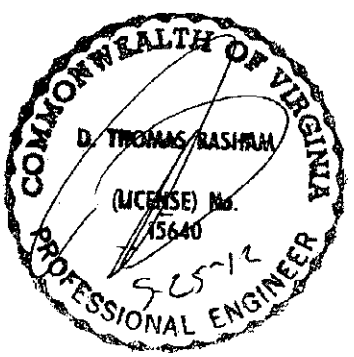
***PTL NUMBER FROM CERTIFICATE TO CONSTRUCT:*** 24820
***Attach*** Copy of the original Certificate to Construct if issued prior to November 9, 2008. If applicable, provide verification of compliance with any conditions in the Certificate to Construct.

Design Flow: (a) average daily flow (MGD): .0055 (b) peak flow (MGD): .0055
For sewage treatment plant, water reclamation or satellite reclamation projects, provide the VPDES/VPA Permit Number: VA0092452
Is a new Discharge Monitoring Report (DMR) or other monthly monitoring report required? Yes ☒ No ☐
For Pump Stations, Sewage Treatment Plants, and Reclamation Systems, check Reliability Class: I ☐ II ☒ III ☐ NA ☐

Two options are provided for the Statement of Completion, depending on whether the project is being authorized under the Sewage Collection and Treatment Regulations, the Water Reclamation and Reuse Regulations, or BOTH. Please check the appropriate box and then provide signature and seal below as indicated.

☒ *The following statement of completion for issuance of a Certificate to Operate under the Sewage Collection and Treatment Regulations must be signed and sealed by the responsible engineer.* (DEQ will not conduct a confirming inspection.)

***"The construction of the project has been completed in accordance with the referenced plans and specifications or revised only in accordance with 9 VAC 25-790-180.B, and inspections have been performed to make this statement in accordance with Section 9 VAC 25-790-180.C.1 of the Sewage Collection and Treatment Regulations."***




D. Thomas Basham PE 5-25-12
Licensed Engineer's Signature and original seal (signed and dated)

☐ *The following statement of completion for issuance of a Certificate to Operate under the Water Reclamation and Reuse Regulation must be signed and sealed by the responsible engineer.* (DEQ will not conduct a confirming inspection.)

***"The construction of the project has been completed in accordance with the referenced plans and specifications or revised only in accordance with 9 VAC 25-740-120-B.2.b. and inspections have been performed to make this statement in accordance with Section 9 VAC 25-40-120.B.3.a. of the Water Reclamation and Reuse Regulations."***

Licensed Engineer's Signature and original seal (signed and dated)

*For DEQ use only:*

In accordance with *Code of Virginia* 1950, as amended, Title 62.1, Section 62.1-44.19, this form, signed by the appropriate DEQ representative, serves as the **Certificate to Operate** for the referenced project.

| Alison Thompson | | 6/15/12 | 25624 |
|---|---|---|---|
| Name | Signature | Date | CTO PTL Number |

*Department of Environmental Quality Authorized Representative*

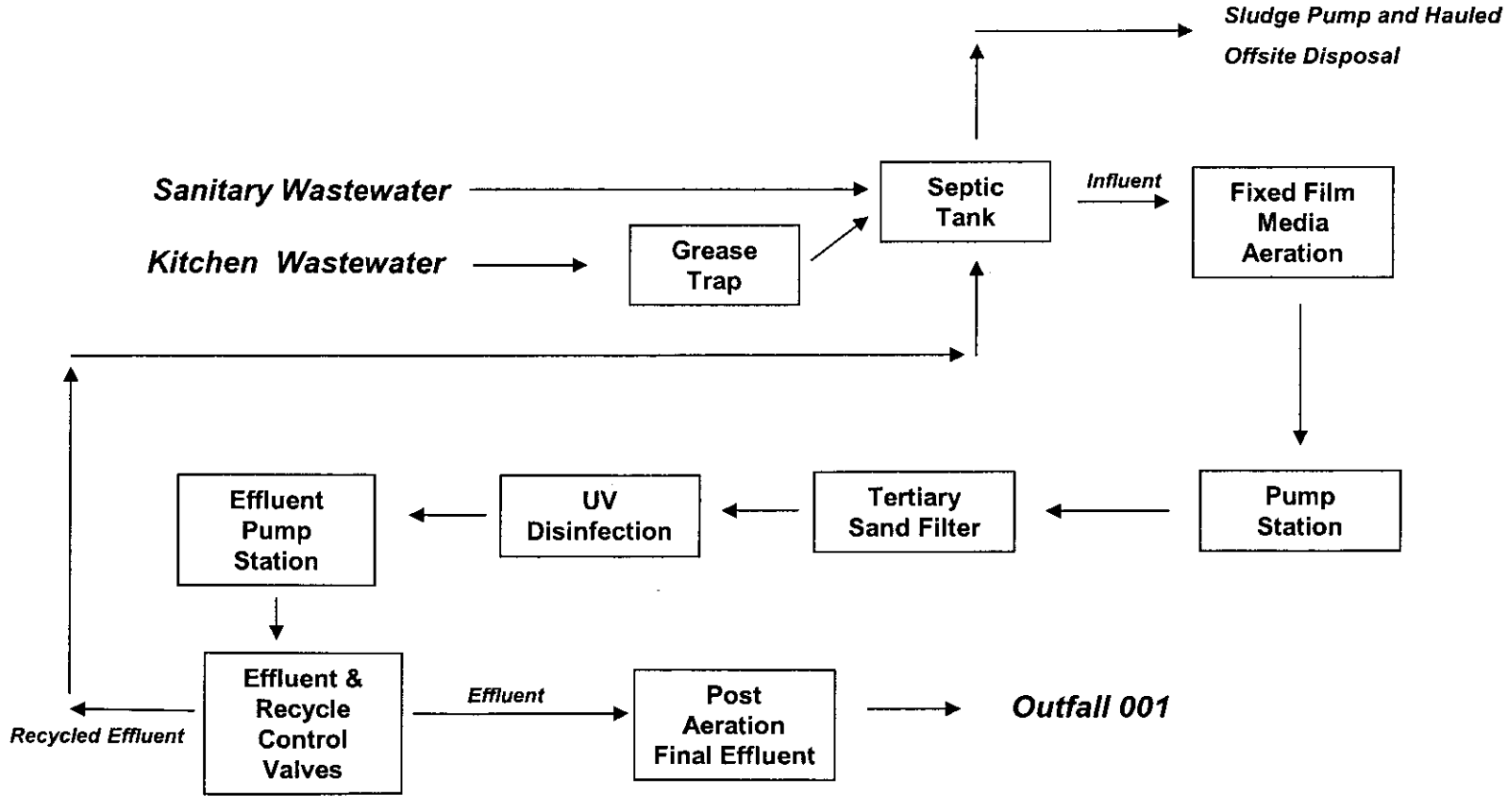
**An Operation and Maintenance Manual must be submitted to the DEQ Regional Office in accordance with 9 VAC 25-790 for sewage treatment plants, 9 VAC 25-740 for water reclamation systems and satellite reclamation systems and VPDES or VPA permit requirements.**

**For pump stations, an Operation and Maintenance Manual must be maintained for the facility in accordance with 9 VAC 25-790, but is NOT to be submitted to DEQ. The pump station must be operated and maintained in accordance with that manual.**

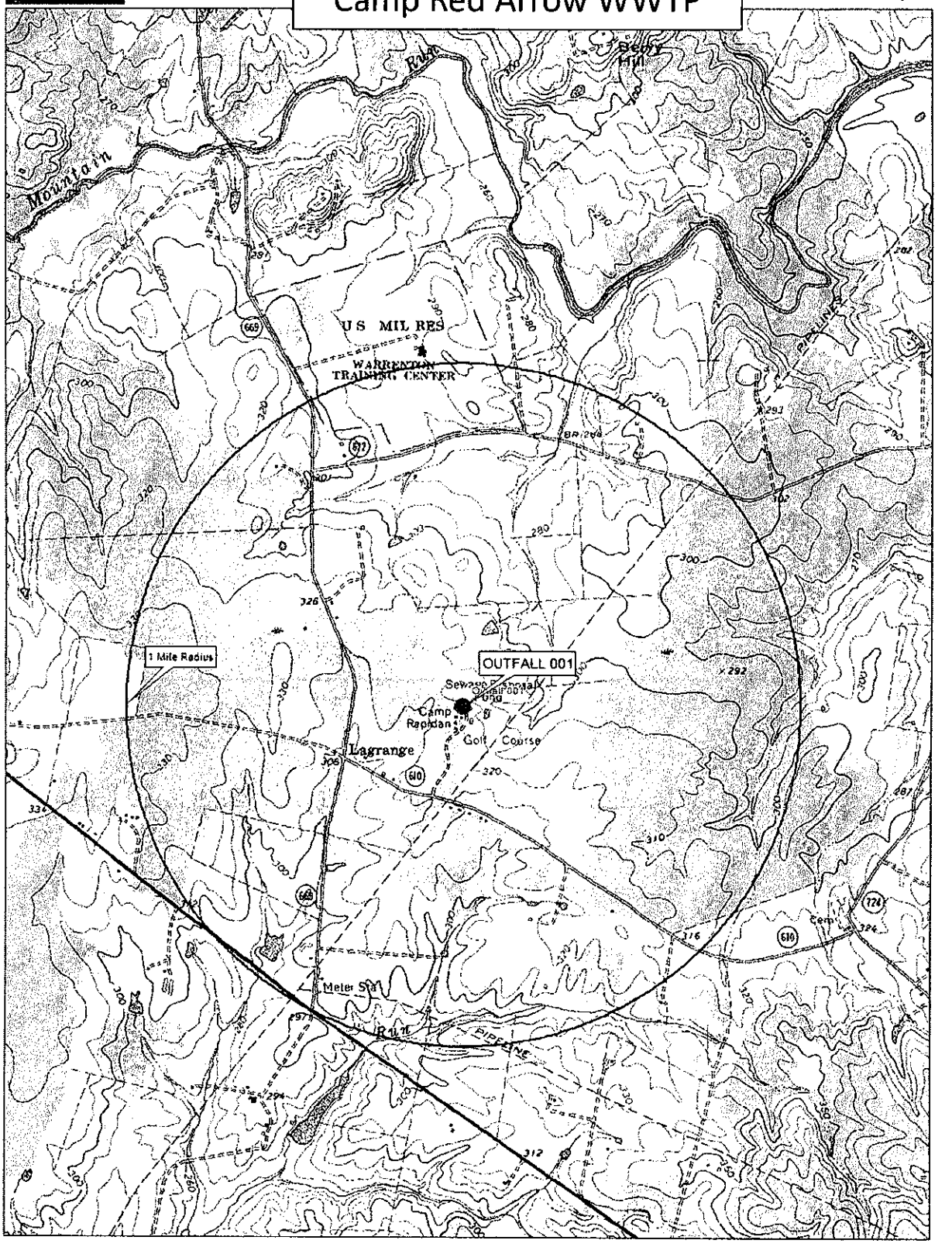
Attachment 3

# Camp Red Arrow WWTP

## Process Diagram



# Camp Red Arrow WWTP




Attachment 4

February 11, 2009
**MEMORANDUM**

To: File

From: Susan Oakes, Permit Writer

Subject: Camp Red Arrow WWTP VA0092452, February 11, 2009 Site Visit

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On February 11, 2009, a DEQ site visit was made to Camp Red Arrow to conduct an inspection for a proposed WWTP permit issuance. Persons present during the inspection were Perry Utz, Director of the Children's Bible Ministries and Alison Thompson and Susan Oakes of DEQ.

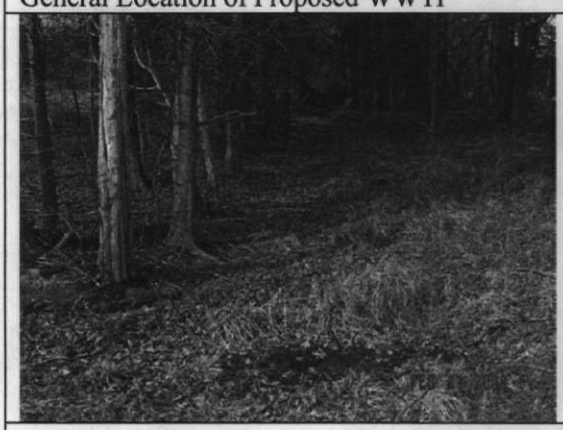
Children's Bible Ministries of Virginia, Inc. are proposing to build a 0.0055 mgd sewage treatment plant to serve a bible camp for children. The camp will operate during summer months and several weekends during the year. The current size of the proposed camp is no more than 100 kids with a maximum camp size of 200 campers per day with 20 staff per day.

Mr. Utz provided a walking tour of the campgrounds. The site will have a camp office, check-in building, three cabins, dining hall, nurse's station, bath house, swimming pool and pool pump house. The camp office, bathhouse, dining hall and nurse's station will tie into the proposed wastewater treatment system. The proposed system will consist of a dual train treatment system. A 2,500 gallon grease trap tank (trash tank) will be provided for the kitchen waste coming from the dining hall and enter a 5,000 gallon septic tank. All non-kitchen waste will bypass the grease trap tank and tie in to the line entering the 5,000 gallon septic tank (trash tank). This tank is for solids and primary settling. Wastewater will then split and flow to two 2,500 gallon trash tanks followed by two 3,000 gpd Fixed Film Delta Treatment units which are proposed to provide 90% reduction in BOD and TSS. The wastewater will then be dosed via two 5,000 gallon pump tanks to two single pass sand filters on to two UV disinfection units followed by a 16,000 gallon discharge pump tank. The treated and disinfected effluent will then enter a 500 gallon re-aeration chamber in 114.5 gallon doses every 30 minutes. It is then pumped to the discharge ditch where it will make its way to Mountain Run.

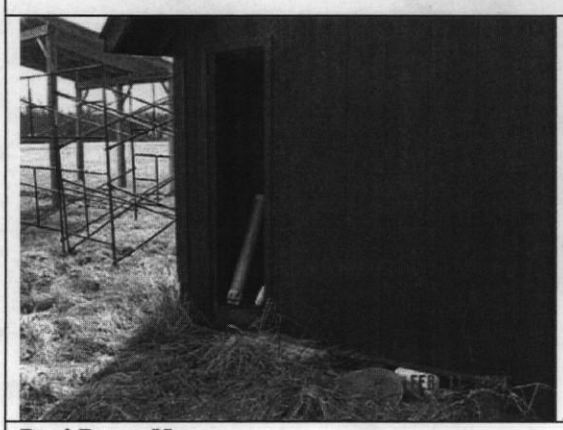
The WWTP location will be in the northwest corner of the property. Effluent will gravity flow southeasterly from the WWTP past the swimming pool through a field along the edge of an old lagoon where it will turn north again to discharge into a ditch at the edge of the property. It is noted that the discharge for the backwash from the pool pump house will need to be addressed by either tying into the WWTP discharge or establishing its' own outfall. In addition, the lagoon will need to be closed in accordance with the SCAT regulations.

General Location of Proposed WWTP

Abandoned Sewage Disposal Pond



Discharge Ditch



Pool Pump House

| | |
|---|---|
| To: | Alison Thompson |
| From: | Rebecca Shoemaker |
| Date: | December 16, 2014 |
| Subject: | Planning Statement for Camp Red Arrow WWTP |
| Permit Number: | VA0092452 |

**Information for Outfall 001:**

| | |
|---|---|
| Discharge Type: | Municipal |
| Discharge Flow: | 0.005 MGD |
| Receiving Stream: | Mountain Run, UT |
| Latitude / Longitude: | 38 26 37.4 77 50 39.8 |
| Rivermile: | 1.4 |
| Streamcode: | 3-XIE |
| Waterbody: | VAN-E09R |
| Water Quality Standards: | Class III, Section 4, No special standards |
| Drainage Area: | 0.09 sq mi |

1. Please provide water quality monitoring information for the receiving stream segment. If there is not monitoring information for the receiving stream segment, please provide information on the nearest downstream monitoring station, including how far downstream the monitoring station is from the outfall.

   This facility discharges into an unnamed tributary to Mountain Run that has not been monitored or assessed. Mountain Run (MTN) is located approximately 1.4 miles downstream from Outfall 001. The following is the water quality summary for this segment of Mountain Run, as taken from the 2012 Integrated Report:

   *Class III, Section 4.*

   *DEQ monitoring stations located in this segment of the Mountain Run: N/A*

   *The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory. The aquatic life is impaired based on benthic monitoring along neighboring assessment units. An observed effect is noted for the aquatic life use based on one exceedance of the consensus based probable effects concentration (PEC) sediment screening values for chlordane (17.6 ppb, dry weight). The wildlife use is considered fully supporting. The recreation use was not assessed.*

   The nearest downstream DEQ monitoring stations are located within a segment of Mountain Run that begins approximately 2.8 miles downstream from Outfall 001. DEQ fish tissue/sediment station 3-MTN005.79 is located at Route 620/672, approximately 4.6 miles downstream from Outfall 001 and ambient and biological monitoring station 3-MTN000.59 is located at Route 620, approximately 9.8 miles downstream from Outfall 001. The following is the water quality summary for this segment of Mountain Run, as taken from the 2012 Integrated Report:

*Class III, Section 4.*

*DEQ monitoring stations located in this segment of the Mountain Run:*

- *fish tissue/sediment station 3-MTN005.79, at Route 620/672*
- *ambient and biological monitoring station 3-MTN000.59, at Route 620*

*The fish consumption use is categorized as impaired due to a Virginia Department of Health, Division of Health Hazards Control, PCB fish consumption advisory and fish tissue monitoring data. SPMD deployment at station 3-MTN003.31, in 2003, also resulted in one sample with a concentration above the surface water criterion for total PCBs of 640 pg/L, noted by an observed effect.*

*E. coli monitoring finds a bacterial impairment, resulting in an impaired classification for the recreation use. A fecal coliform TMDL for the Mountain Run watershed has been submitted and approved.*

*Benthic macroinvertebrate biological monitoring finds the aquatic life use to be not supported. Additionally, the aquatic life use is noted with an observed effect, as an excursion of the consensus PEC freshwater sediment screening value (SV) of 128 parts per million (ppm, dry weight) for lead (Pb) in sediment was recorded from a sediment sample collected in 2003 at monitoring station 3-MTN003.31. This observed effect is will be carried over.*

*The wildlife use is considered fully supporting.*

2. Does this facility discharge to a stream segment on the 303(d) list? If yes, please fill out Table A.

   No.

3. Are there any downstream 303(d) listed impairments that are relevant to this discharge? If yes, please fill out Table B.

   Yes.

**Table B. Information on Downstream 303(d) Impairments and TMDLs**

| Waterbody Name | Impaired Use | Cause | Distance From Outfall | TMDL completed | WLA | Basis for WLA | TMDL Schedule |
|---|---|---|---|---|---|---|---|
| ***Impairment Information in the 2012 Integrated Report*** | | | | | | | |
| Mountain Run | Aquatic Life | Benthic Macroinvertebrates | 1.4 miles | No | --- | --- | 2020 |
| | Fish Consumption | PCBs | | No | --- | --- | 2018 |
| | Recreation | *E. coli* | 2.8 miles | Mountain Run Watershed Bacteria 4/27/2001 | 9.57E+09 cfu/year *E. coli* | 126 cfu/100 ml *E. coli* --- 0.0055 MGD | --- |

4. Is there monitoring or other conditions that Planning/Assessment needs in the permit?

   There is a completed downstream TMDL for the aquatic life use impairment for the Chesapeake Bay. However, the Bay TMDL and the WLAs contained within the TMDL are not addressed in this planning statement.

   Mountain Run is listed with a PCB impairment and, in support of the PCB TMDL that is scheduled for development by 2018, this facility is a candidate for low-level PCB monitoring based upon its designation as a municipal facility. Low-level PCB analysis uses EPA Method 1668, which is capable of detecting low-level concentrations for all 209 PCB congeners. DEQ staff has concluded that low-level PCB monitoring is not warranted for this facility, as it is a small wastewater treatment facility (<0.1 MGD). Based upon this information, this facility will not be requested to monitor for low-level PCBs.

5. Fact Sheet Requirements – Please provide information regarding any drinking water intakes located within a 5 mile radius of the discharge point.

   There are no public water supply intakes located within five miles of this discharge.

# FRESHWATER
# WATER QUALITY CRITERIA / WASTELOAD ALLOCATION ANALYSIS

Facility Name: Camp Red Arrow WWTP  Permit No.: VA0092452

Receiving Stream: Mountain Run, UT  Version: OWP Guidance Memo 00-2011 (8/24/00)

| Stream Information | | Stream Flows | | Mixing Information | | Effluent Information | |
|---|---|---|---|---|---|---|---|
| Mean Hardness (as CaCO3) = | mg/L | 1Q10 (Annual) = | 0 MGD | Annual - 1Q10 Mix = | 100 % | Mean Hardness (as CaCO3) = | 50 mg/L |
| 90% Temperature (Annual) = | deg C | 7Q10 (Annual) = | 0 MGD | - 7Q10 Mix = | 100 % | 90% Temp (Annual) = | 25 deg C |
| 90% Temperature (Wet season) = | deg C | 30Q10 (Annual) = | 0 MGD | - 30Q10 Mix = | 100 % | 90% Temp (Wet season) = | 15 deg C |
| 90% Maximum pH = | SU | 1Q10 (Wet season) = | 0 MGD | Wet Season - 1Q10 Mix = | 100 % | 90% Maximum pH = | 8.3 SU |
| 10% Maximum pH = | SU | 30Q10 (Wet season) | 0 MGD | - 30Q10 Mix = | 100 % | 10% Maximum pH = | 7.1 SU |
| Tier Designation (1 or 2) = | 1 | 30Q5 = | 0 MGD | | | Discharge Flow = | 0.0055 MGD |
| Public Water Supply (PWS) Y/N? = | n | Harmonic Mean = | 0 MGD | | | | |
| Trout Present Y/N? = | n | | | | | | |
| Early Life Stages Present Y/N? = | y | | | | | | |

| Parameter | Background | Water Quality Criteria | | | | Wasteload Allocations | | | | Antidegradation Baseline | | | | Antidegradation Allocations | | | | Most Limiting Allocations | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (ug/l unless noted) | Conc. | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH |
| Acenapthene | 0 | -- | -- | na | 9.9E+02 | -- | -- | na | 9.9E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 9.9E+02 |
| Acrolein | 0 | -- | -- | na | 9.3E+00 | -- | -- | na | 9.3E+00 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 9.3E+00 |
| Acrylonitrile [C] | 0 | -- | -- | na | 2.5E+00 | -- | -- | na | 2.5E+00 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.5E+00 |
| Aldrin [C] | 0 | 3.0E+00 | -- | na | 5.0E-04 | 3.0E+00 | -- | na | 5.0E-04 | -- | -- | -- | -- | -- | -- | -- | -- | 3.0E+00 | -- | na | 5.0E-04 |
| Ammonia-N (mg/l) (Yearly) | 0 | 4.71E+00 | 7.75E-01 | na | -- | 4.71E+00 | 7.75E-01 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 4.71E+00 | 7.75E-01 | na | -- |
| Ammonia-N (mg/l) (High Flow) | 0 | 4.71E+00 | 1.48E+00 | na | -- | 4.71E+00 | 1.48E+00 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 4.71E+00 | 1.48E+00 | na | -- |
| Anthracene | 0 | -- | -- | na | 4.0E+04 | -- | -- | na | 4.0E+04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 4.0E+04 |
| Antimony | 0 | -- | -- | na | 6.4E+02 | -- | -- | na | 6.4E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 6.4E+02 |
| Arsenic | 0 | 3.4E+02 | 1.5E+02 | na | -- | 3.4E+02 | 1.5E+02 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 3.4E+02 | 1.5E+02 | na | -- |
| Barium | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Benzene [C] | 0 | -- | -- | na | 5.1E+02 | -- | -- | na | 5.1E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 5.1E+02 |
| Benzidine [C] | 0 | -- | -- | na | 2.0E-03 | -- | -- | na | 2.0E-03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.0E-03 |
| Benzo (a) anthracene [C] | 0 | -- | -- | na | 1.8E-01 | -- | -- | na | 1.8E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.8E-01 |
| Benzo (b) fluoranthene [C] | 0 | -- | -- | na | 1.8E-01 | -- | -- | na | 1.8E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.8E-01 |
| Benzo (k) fluoranthene [C] | 0 | -- | -- | na | 1.8E-01 | -- | -- | na | 1.8E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.8E-01 |
| Benzo (a) pyrene [C] | 0 | -- | -- | na | 1.8E-01 | -- | -- | na | 1.8E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.8E-01 |
| Bis2-Chloroethyl Ether [C] | 0 | -- | -- | na | 5.3E+00 | -- | -- | na | 5.3E+00 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 5.3E+00 |
| Bis2-Chloroisopropyl Ether | 0 | -- | -- | na | 6.5E+04 | -- | -- | na | 6.5E+04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 6.5E+04 |
| Bis 2-Ethylhexyl Phthalate [C] | 0 | -- | -- | na | 2.2E+01 | -- | -- | na | 2.2E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.2E+01 |
| Bromoform [C] | 0 | -- | -- | na | 1.4E+03 | -- | -- | na | 1.4E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.4E+03 |
| Butylbenzylphthalate | 0 | -- | -- | na | 1.9E+03 | -- | -- | na | 1.9E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.9E+03 |
| Cadmium | 0 | 1.8E+00 | 6.6E-01 | na | -- | 1.8E+00 | 6.6E-01 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.8E+00 | 6.6E-01 | na | -- |
| Carbon Tetrachloride [C] | 0 | -- | -- | na | 1.6E+01 | -- | -- | na | 1.6E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.6E+01 |
| Chlordane [C] | 0 | 2.4E+00 | 4.3E-03 | na | 8.1E-03 | 2.4E+00 | 4.3E-03 | na | 8.1E-03 | -- | -- | -- | -- | -- | -- | -- | -- | 2.4E+00 | 4.3E-03 | na | 8.1E-03 |
| Chloride | 0 | 8.6E+05 | 2.3E+05 | na | -- | 8.6E+05 | 2.3E+05 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 8.6E+05 | 2.3E+05 | na | -- |
| TRC | 0 | 1.9E+01 | 1.1E+01 | na | -- | 1.9E+01 | 1.1E+01 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.9E+01 | 1.1E+01 | na | -- |
| Chlorobenzene | 0 | -- | -- | na | 1.6E+03 | -- | -- | na | 1.6E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.6E+03 |



Attachment 7

| Parameter | Background | Water Quality Criteria | | | | Wasteload Allocations | | | | Antidegradation Baseline | | | | Antidegradation Allocations | | | | Most Limiting Allocations | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (ug/l unless noted) | Conc. | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH |
| Chlorodibromomethane[C] | 0 | -- | -- | na | 1.3E+02 | -- | -- | na | 1.3E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.3E+02 |
| Chloroform | 0 | -- | -- | na | 1.1E+04 | -- | -- | na | 1.1E+04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.1E+04 |
| 2-Chloronaphthalene | 0 | -- | -- | na | 1.6E+03 | -- | -- | na | 1.6E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.6E+03 |
| 2-Chlorophenol | 0 | -- | -- | na | 1.5E+02 | -- | -- | na | 1.5E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.5E+02 |
| Chlorpyrifos | 0 | 8.3E-02 | 4.1E-02 | na | -- | 8.3E-02 | 4.1E-02 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 8.3E-02 | 4.1E-02 | na | -- |
| Chromium III | 0 | 3.2E+02 | 4.2E+01 | na | -- | 3.2E+02 | 4.2E+01 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 3.2E+02 | 4.2E+01 | na | -- |
| Chromium VI | 0 | 1.6E+01 | 1.1E+01 | na | -- | 1.6E+01 | 1.1E+01 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.6E+01 | 1.1E+01 | na | -- |
| Chromium, Total | 0 | -- | -- | 1.0E+02 | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Chrysene [C] | 0 | -- | -- | na | 1.8E-02 | -- | -- | na | 1.8E-02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.8E-02 |
| Copper | 0 | 7.0E+00 | 5.0E+00 | na | -- | 7.0E+00 | 5.0E+00 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 7.0E+00 | 5.0E+00 | na | -- |
| Cyanide, Free | 0 | 2.2E+01 | 5.2E+00 | na | 1.6E+04 | 2.2E+01 | 5.2E+00 | na | 1.6E+04 | -- | -- | -- | -- | -- | -- | -- | -- | 2.2E+01 | 5.2E+00 | na | 1.6E+04 |
| DDD [C] | 0 | -- | -- | na | 3.1E-03 | -- | -- | na | 3.1E-03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 3.1E-03 |
| DDE [C] | 0 | -- | -- | na | 2.2E-03 | -- | -- | na | 2.2E-03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.2E-03 |
| DDT [C] | 0 | 1.1E+00 | 1.0E-03 | na | 2.2E-03 | 1.1E+00 | 1.0E-03 | na | 2.2E-03 | -- | -- | -- | -- | -- | -- | -- | -- | 1.1E+00 | 1.0E-03 | na | 2.2E-03 |
| Demeton | 0 | -- | 1.0E-01 | na | -- | -- | 1.0E-01 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.0E-01 | na | -- |
| Diazinon | 0 | 1.7E-01 | 1.7E-01 | na | -- | 1.7E-01 | 1.7E-01 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.7E-01 | 1.7E-01 | na | -- |
| Dibenz(a,h)anthracene [C] | 0 | -- | -- | na | 1.8E-01 | -- | -- | na | 1.8E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.8E-01 |
| 1,2-Dichlorobenzene | 0 | -- | -- | na | 1.3E+03 | -- | -- | na | 1.3E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.3E+03 |
| 1,3-Dichlorobenzene | 0 | -- | -- | na | 9.6E+02 | -- | -- | na | 9.6E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 9.6E+02 |
| 1,4-Dichlorobenzene | 0 | -- | -- | na | 1.9E+02 | -- | -- | na | 1.9E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.9E+02 |
| 3,3-Dichlorobenzidine[C] | 0 | -- | -- | na | 2.8E-01 | -- | -- | na | 2.8E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.8E-01 |
| Dichlorobromomethane [C] | 0 | -- | -- | na | 1.7E+02 | -- | -- | na | 1.7E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.7E+02 |
| 1,2-Dichloroethane [C] | 0 | -- | -- | na | 3.7E+02 | -- | -- | na | 3.7E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 3.7E+02 |
| 1,1-Dichloroethylene | 0 | -- | -- | na | 7.1E+03 | -- | -- | na | 7.1E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 7.1E+03 |
| 1,2-trans-dichloroethylene | 0 | -- | -- | na | 1.0E+04 | -- | -- | na | 1.0E+04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.0E+04 |
| 2,4-Dichlorophenol | 0 | -- | -- | na | 2.9E+02 | -- | -- | na | 2.9E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.9E+02 |
| 2,4-Dichlorophenoxy acetic acid (2,4-D) | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| 1,2-Dichloropropane[C] | 0 | -- | -- | na | 1.5E+02 | -- | -- | na | 1.5E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.5E+02 |
| 1,3-Dichloropropene [C] | 0 | -- | -- | na | 2.1E+02 | -- | -- | na | 2.1E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.1E+02 |
| Dieldrin [C] | 0 | 2.4E-01 | 5.6E-02 | na | 5.4E-04 | 2.4E-01 | 5.6E-02 | na | 5.4E-04 | -- | -- | -- | -- | -- | -- | -- | -- | 2.4E-01 | 5.6E-02 | na | 5.4E-04 |
| Diethyl Phthalate | 0 | -- | -- | na | 4.4E+04 | -- | -- | na | 4.4E+04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 4.4E+04 |
| 2,4-Dimethylphenol | 0 | -- | -- | na | 8.5E+02 | -- | -- | na | 8.5E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 8.5E+02 |
| Dimethyl Phthalate | 0 | -- | -- | na | 1.1E+06 | -- | -- | na | 1.1E+06 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.1E+06 |
| Di-n-Butyl Phthalate | 0 | -- | -- | na | 4.5E+03 | -- | -- | na | 4.5E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 4.5E+03 |
| 2,4 Dinitrophenol | 0 | -- | -- | na | 5.3E+03 | -- | -- | na | 5.3E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 5.3E+03 |
| 2-Methyl-4,6-Dinitrophenol | 0 | -- | -- | na | 2.8E+02 | -- | -- | na | 2.8E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.8E+02 |
| 2,4-Dinitrotoluene [C] | 0 | -- | -- | na | 3.4E+01 | -- | -- | na | 3.4E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 3.4E+01 |
| Dioxin 2,3,7,8-tetrachlorodibenzo-p-dioxin | 0 | -- | -- | na | 5.1E-08 | -- | -- | na | 5.1E-08 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 5.1E-08 |
| 1,2-Diphenylhydrazine[C] | 0 | -- | -- | na | 2.0E+00 | -- | -- | na | 2.0E+00 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.0E+00 |
| Alpha-Endosulfan | 0 | 2.2E-01 | 5.6E-02 | na | 8.9E+01 | 2.2E-01 | 5.6E-02 | na | 8.9E+01 | -- | -- | -- | -- | -- | -- | -- | -- | 2.2E-01 | 5.6E-02 | na | 8.9E+01 |
| Beta-Endosulfan | 0 | 2.2E-01 | 5.6E-02 | na | 8.9E+01 | 2.2E-01 | 5.6E-02 | na | 8.9E+01 | -- | -- | -- | -- | -- | -- | -- | -- | 2.2E-01 | 5.6E-02 | na | 8.9E+01 |
| Alpha + Beta Endosulfan | 0 | 2.2E-01 | 5.6E-02 | -- | -- | 2.2E-01 | 5.6E-02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2.2E-01 | 5.6E-02 | -- | -- |
| Endosulfan Sulfate | 0 | -- | -- | na | 8.9E+01 | -- | -- | na | 8.9E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 8.9E+01 |
| Endrin | 0 | 8.6E-02 | 3.6E-02 | na | 6.0E-02 | 8.6E-02 | 3.6E-02 | na | 6.0E-02 | -- | -- | -- | -- | -- | -- | -- | -- | 8.6E-02 | 3.6E-02 | na | 6.0E-02 |
| Endrin Aldehyde | 0 | -- | -- | na | 3.0E-01 | -- | -- | na | 3.0E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 3.0E-01 |

| Parameter | Background | Water Quality Criteria | | | | Wasteload Allocations | | | | Antidegradation Baseline | | | | Antidegradation Allocations | | | | Most Limiting Allocations | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (ug/l unless noted) | Conc. | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH |
| Ethylbenzene | 0 | -- | -- | na | 2.1E+03 | -- | -- | na | 2.1E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.1E+03 |
| Fluoranthene | 0 | -- | -- | na | 1.4E+02 | -- | -- | na | 1.4E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.4E+02 |
| Fluorene | 0 | -- | -- | na | 5.3E+03 | -- | -- | na | 5.3E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 5.3E+03 |
| Foaming Agents | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Guthion | 0 | -- | 1.0E-02 | na | -- | -- | 1.0E-02 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.0E-02 | na | -- |
| Heptachlor [C] | 0 | 5.2E-01 | 3.8E-03 | na | 7.9E-04 | 5.2E-01 | 3.8E-03 | na | 7.9E-04 | -- | -- | -- | -- | -- | -- | -- | -- | 5.2E-01 | 3.8E-03 | na | 7.9E-04 |
| Heptachlor Epoxide [C] | 0 | 5.2E-01 | 3.8E-03 | na | 3.9E-04 | 5.2E-01 | 3.8E-03 | na | 3.9E-04 | -- | -- | -- | -- | -- | -- | -- | -- | 5.2E-01 | 3.8E-03 | na | 3.9E-04 |
| Hexachlorobenzene [C] | 0 | -- | -- | na | 2.9E-03 | -- | -- | na | 2.9E-03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.9E-03 |
| Hexachlorobutadiene [C] | 0 | -- | -- | na | 1.8E+02 | -- | -- | na | 1.8E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.8E+02 |
| Hexachlorocyclohexane Alpha-BHC [C] | 0 | -- | -- | na | 4.9E-02 | -- | -- | na | 4.9E-02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 4.9E-02 |
| Hexachlorocyclohexane Beta-BHC [C] | 0 | -- | -- | na | 1.7E-01 | -- | -- | na | 1.7E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.7E-01 |
| Hexachlorocyclohexane Gamma-BHC [C] (Lindane) | 0 | 9.5E-01 | na | na | 1.8E+00 | 9.5E-01 | -- | na | 1.8E+00 | -- | -- | -- | -- | -- | -- | -- | -- | 9.5E-01 | -- | na | 1.8E+00 |
| Hexachlorocyclopentadiene | 0 | -- | -- | na | 1.1E+03 | -- | -- | na | 1.1E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.1E+03 |
| Hexachloroethane [C] | 0 | -- | -- | na | 3.3E+01 | -- | -- | na | 3.3E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 3.3E+01 |
| Hydrogen Sulfide | 0 | -- | 2.0E+00 | na | -- | -- | 2.0E+00 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2.0E+00 | na | -- |
| Indeno (1,2,3-cd) pyrene [C] | 0 | -- | -- | na | 1.8E-01 | -- | -- | na | 1.8E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.8E-01 |
| Iron | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Isophorone [C] | 0 | -- | -- | na | 9.6E+03 | -- | -- | na | 9.6E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 9.6E+03 |
| Kepone | 0 | -- | 0.0E+00 | na | -- | -- | 0.0E+00 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.0E+00 | na | -- |
| Lead | 0 | 4.9E+01 | 5.6E+00 | na | -- | 4.9E+01 | 5.6E+00 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 4.9E+01 | 5.6E+00 | na | -- |
| Malathion | 0 | -- | 1.0E-01 | na | -- | -- | 1.0E-01 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.0E-01 | na | -- |
| Manganese | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Mercury | 0 | 1.4E+00 | 7.7E-01 | -- | -- | 1.4E+00 | 7.7E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.4E+00 | 7.7E-01 | -- | -- |
| Methyl Bromide | 0 | -- | -- | na | 1.5E+03 | -- | -- | na | 1.5E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.5E+03 |
| Methylene Chloride [C] | 0 | -- | -- | na | 5.9E+03 | -- | -- | na | 5.9E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 5.9E+03 |
| Methoxychlor | 0 | -- | 3.0E-02 | na | -- | -- | 3.0E-02 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 3.0E-02 | na | -- |
| Mirex | 0 | -- | 0.0E+00 | na | -- | -- | 0.0E+00 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | 0.0E+00 | na | -- |
| Nickel | 0 | 1.0E+02 | 1.1E+01 | na | 4.6E+03 | 1.0E+02 | 1.1E+01 | na | 4.6E+03 | -- | -- | -- | -- | -- | -- | -- | -- | 1.0E+02 | 1.1E+01 | na | 4.6E+03 |
| Nitrate (as N) | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Nitrobenzene | 0 | -- | -- | na | 6.9E+02 | -- | -- | na | 6.9E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 6.9E+02 |
| N-Nitrosodimethylamine [C] | 0 | -- | -- | na | 3.0E+01 | -- | -- | na | 3.0E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 3.0E+01 |
| N-Nitrosodiphenylamine [C] | 0 | -- | -- | na | 6.0E+01 | -- | -- | na | 6.0E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 6.0E+01 |
| N-Nitrosodi-n-propylamine [C] | 0 | -- | -- | na | 5.1E+00 | -- | -- | na | 5.1E+00 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 5.1E+00 |
| Nonylphenol | 0 | 2.8E+01 | 6.6E+00 | -- | -- | 2.8E+01 | 6.6E+00 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 2.8E+01 | 6.6E+00 | na | -- |
| Parathion | 0 | 6.5E-02 | 1.3E-02 | na | -- | 6.5E-02 | 1.3E-02 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 6.5E-02 | 1.3E-02 | na | -- |
| PCB Total [C] | 0 | -- | 1.4E-02 | na | 6.4E-04 | -- | 1.4E-02 | na | 6.4E-04 | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.4E-02 | na | 6.4E-04 |
| Pentachlorophenol [C] | 0 | 9.6E+00 | 7.4E+00 | na | 3.0E+01 | 9.6E+00 | 7.4E+00 | na | 3.0E+01 | -- | -- | -- | -- | -- | -- | -- | -- | 9.6E+00 | 7.4E+00 | na | 3.0E+01 |
| Phenol | 0 | -- | -- | na | 8.6E+05 | -- | -- | na | 8.6E+05 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 8.6E+05 |
| Pyrene | 0 | -- | -- | na | 4.0E+03 | -- | -- | na | 4.0E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 4.0E+03 |
| Radionuclides | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Gross Alpha Activity (pCi/L) | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Beta and Photon Activity (mrem/yr) | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Radium 226 + 228 (pCi/L) | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Uranium (ug/l) | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |

| Parameter | Background | Water Quality Criteria | | | | Wasteload Allocations | | | | Antidegradation Baseline | | | | Antidegradation Allocations | | | | Most Limiting Allocations | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (ug/l unless noted) | Conc. | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH | Acute | Chronic | HH (PWS) | HH |
| Selenium, Total Recoverable | 0 | 2.0E+01 | 5.0E+00 | na | 4.2E+03 | 2.0E+01 | 5.0E+00 | na | 4.2E+03 | -- | -- | -- | -- | -- | -- | -- | -- | 2.0E+01 | 5.0E+00 | na | 4.2E+03 |
| Silver | 0 | 1.0E+00 | -- | na | -- | 1.0E+00 | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 1.0E+00 | -- | na | -- |
| Sulfate | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| 1,1,2,2-Tetrachloroethane[C] | 0 | -- | -- | na | 4.0E+01 | -- | -- | na | 4.0E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 4.0E+01 |
| Tetrachloroethylene[C] | 0 | -- | -- | na | 3.3E+01 | -- | -- | na | 3.3E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 3.3E+01 |
| Thallium | 0 | -- | -- | na | 4.7E-01 | -- | -- | na | 4.7E-01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 4.7E-01 |
| Toluene | 0 | -- | -- | na | 6.0E+03 | -- | -- | na | 6.0E+03 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 6.0E+03 |
| Total dissolved solids | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Toxaphene [C] | 0 | 7.3E-01 | 2.0E-04 | na | 2.8E-03 | 7.3E-01 | 2.0E-04 | na | 2.8E-03 | -- | -- | -- | -- | -- | -- | -- | -- | 7.3E-01 | 2.0E-04 | na | 2.8E-03 |
| Tributyltin | 0 | 4.6E-01 | 7.2E-02 | na | -- | 4.6E-01 | 7.2E-02 | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | 4.6E-01 | 7.2E-02 | na | -- |
| 1,2,4-Trichlorobenzene | 0 | -- | -- | na | 7.0E+01 | -- | -- | na | 7.0E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 7.0E+01 |
| 1,1,2-Trichloroethane[C] | 0 | -- | -- | na | 1.6E+02 | -- | -- | na | 1.6E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 1.6E+02 |
| Trichloroethylene [C] | 0 | -- | -- | na | 3.0E+02 | -- | -- | na | 3.0E+02 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 3.0E+02 |
| 2,4,6-Trichlorophenol [C] | 0 | -- | -- | na | 2.4E+01 | -- | -- | na | 2.4E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.4E+01 |
| 2-(2,4,5-Trichlorophenoxy) propionic acid (Silvex) | 0 | -- | -- | na | -- | -- | -- | na | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | -- |
| Vinyl Chloride[C] | 0 | -- | -- | na | 2.4E+01 | -- | -- | na | 2.4E+01 | -- | -- | -- | -- | -- | -- | -- | -- | -- | -- | na | 2.4E+01 |
| Zinc | 0 | 6.5E+01 | 6.6E+01 | na | 2.6E+04 | 6.5E+01 | 6.6E+01 | na | 2.6E+04 | -- | -- | -- | -- | -- | -- | -- | -- | 6.5E+01 | 6.6E+01 | na | 2.6E+04 |

Notes:

1. All concentrations expressed as micrograms/liter (ug/l), unless noted otherwise
2. Discharge flow is highest monthly average or Form 2C maximum for Industries and design flow for Municipals
3. Metals measured as Dissolved, unless specified otherwise
4. "C" indicates a carcinogenic parameter
5. Regular WLAs are mass balances (minus background concentration) using the % of stream flow entered above under Mixing Information.
   Antidegradation WLAs are based upon a complete mix.
6. Antideg. Baseline = (0.25(WQC - background conc.) + background conc.) for acute and chronic
   = (0.1(WQC - background conc.) + background conc.) for human health
7. WLAs established at the following stream flows: 1Q10 for Acute, 30Q10 for Chronic Ammonia, 7Q10 for Other Chronic, 30Q5 for Non-carcinogens and Harmonic Mean for Carcinogens. To apply mixing ratios from a model set the stream flow equal to (mixing ratio - 1), effluent flow equal to 1 and 100% mix.

| Metal | Target Value (SSTV) |
|---|---|
| Antimony | 6.4E+02 |
| Arsenic | 9.0E+01 |
| Barium | na |
| Cadmium | 3.9E-01 |
| Chromium III | 2.5E+01 |
| Chromium VI | 6.4E+00 |
| Copper | 2.8E+00 |
| Iron | na |
| Lead | 3.4E+00 |
| Manganese | na |
| Mercury | 4.6E-01 |
| Nickel | 6.8E+00 |
| Selenium | 3.0E+00 |
| Silver | 4.2E-01 |
| Zinc | 2.6E+01 |

Note: do not use QL's lower than the minimum QL's provided in agency guidance

VA0092452 Camp Red Arrow WWTP

| Date | pH (S.U.) |
|---|---|
| 10/6/2014 | 8.52 |
| 8/1/2014 | 7.98 |
| 8/4/2014 | 7.82 |
| 8/28/2014 | 8.29 |
| 7/1/2014 | 7.23 |
| 7/3/2014 | 7.47 |
| 7/9/2014 | 7.80 |
| 7/11/2014 | 7.66 |
| 7/16/2014 | 7.57 |
| 7/18/2014 | 7.77 |
| 7/22/2014 | 7.77 |
| 7/24/2014 | 7.74 |
| 7/25/2014 | 7.61 |
| 7/28/2014 | 7.93 |
| 6/9/2014 | 7.98 |
| 6/10/2014 | 7.25 |
| 6/11/2014 | 7.15 |
| 6/13/2014 | 7.01 |
| 6/14/2014 | 7.09 |
| 6/17/2014 | 7.56 |
| 6/20/2014 | 7.49 |
| 6/24/2014 | 7.78 |
| 6/25/2014 | 7.69 |
| 6/26/2014 | 7.39 |
| 5/2/2014 | 8.38 |
| 8/2/2013 | 8.25 |
| 7/3/2013 | 7.11 |
| 7/9/2013 | 7.52 |
| 7/10/2013 | 6.62 |
| 7/15/2013 | 7.92 |
| 7/16/2013 | 7.8 |
| 7/18/2013 | 7.47 |
| 7/24/2013 | 8.06 |
| 7/31/2013 | 7.95 |
| 6/13/2013 | 8.27 |
| 6/20/2013 | 7.96 |
| 6/26/2013 | 7.83 |
| 5/16/2013 | 8.6 |
| 5/17/2013 | 8.67 |

8.308 90th percentile pH

7.142 10th percentile pH

**VaFWIS Initial Project Assessment Report** Compiled on 7/30/2014, 8:47:48 AM

Help

Known or likely to occur within a **2 mile radius around point 38,26,37.6 77,30,47.2** in **179 Stafford County, VA**

View Map of Site Location

431 Known or Likely Species ordered by Status Concern for Conservation (displaying first 20) (18 species with Status* or Tier I** or Tier II** )

| BOVA Code | Status* | Tier** | Common Name | Scientific Name | Confirmed | Database(s) |
|---|---|---|---|---|---|---|
| 010032 | FESE | II | Sturgeon, Atlantic | Acipenser oxyrinchus | | BOVA |
| 060003 | FESE | II | Wedgemussel, dwarf | Alasmidonta heterodon | | BOVA,Habitat |
| 040129 | ST | I | Sandpiper, upland | Bartramia longicauda | | BOVA |
| 040293 | ST | I | Shrike, loggerhead | Lanius ludovicianus | | BOVA |
| 040292 | ST | | Shrike, migrant loggerhead | Lanius ludovicianus migrans | | BOVA |
| 050022 | FP | | Bat, northern long-eared | Myotis septentrionalis | | BOVA |
| 100248 | FS | I | Fritillary, regal | Speyeria idalia idalia | | BOVA |
| 040093 | FS | II | Eagle, bald | Haliaeetus leucocephalus | | BOVA |
| 030063 | CC | III | Turtle, spotted | Clemmys guttata | | BOVA |
| 010077 | | I | Shiner, bridle | Notropis bifrenatus | | BOVA |
| 040372 | | I | Crossbill, red | Loxia curvirostra | | BOVA |
| 040225 | | I | Sapsucker, yellow-bellied | Sphyrapicus varius | | BOVA |
| 040319 | | I | Warbler, black-throated green | Dendroica virens | | BOVA |
| 040052 | | II | Duck, American black | Anas rubripes | | BOVA |
| 040036 | | II | Night-heron, yellow-crowned | Nyctanassa violacea violacea | | BOVA |
| 040105 | | II | Rail, king | Rallus elegans | | BOVA |
| 040320 | | II | Warbler, cerulean | Dendroica cerulea | | BOVA |
| 040266 | | II | Wren, winter | Troglodytes troglodytes | | BOVA |
| 030068 | | III | Turtle, eastern box | Terrapene carolina carolina | | BOVA |
| 040037 | | III | Bittern, least | Ixobrychus exilis exilis | | BOVA |

To view **All 431 species** View 431

Attachment 8

* FE=Federal Endangered; FT=Federal Threatened; SE=State Endangered; ST=State Threatened; FP=Federal Proposed; FC=Federal Candidate; FS=Federal Species of Concern; CC=Collection Concern

** I=VA Wildlife Action Plan - Tier I - Critical Conservation Need; II=VA Wildlife Action Plan - Tier II - Very High Conservation Need; III=VA Wildlife Action Plan - Tier III - High Conservation Need; IV=VA Wildlife Action Plan - Tier IV - Moderate Conservation Need

Bat Colonies or Hibernacula: **Not Known**

**Anadromous Fish Use Streams**

N/A

**Colonial Water Bird Survey**

N/A

**Threatened and Endangered Waters**

N/A

**Managed Trout Streams**

N/A

**Bald Eagle Concentration Areas and Roosts**

N/A

**Bald Eagle Nests**

N/A

**Habitat Predicted for Aquatic WAP Tier I & II Species** ( 1 Reach )

**View Map Combined Reaches from Below of Habitat Predicted for WAP Tier I & II Aquatic Species**

| Stream Name | Tier Species | | View Map |
|---|---|---|---|
| | Highest | | |

| | TE* | BOVA Code, Status*, Tier**, Common & Scientific Name | | | | | |
|---|---|---|---|---|---|---|---|
| (20700112) | FESE | 060003 | FESE | II | Wedgemussel, dwarf | Alasmidonta heterodon | Yes |

**Habitat Predicted for Terrestrial WAP Tier I & II Species**

N/A

**Public Holdings:**

N/A

Compiled on 7/30/2014, 8:47:48 AM I572887.0 report=IPA searchType= R dist= 3218 poi= 38,26,37.6 77,30,47.2

PixelSize=64; Anadromous=0.027171; BECAR=0.027843; Bats=0.025743; Buffer=0.170136; County=0.053695; Impediments=0.025242; Init=0.216531; PublicLands=0.035791; SppObs=0.381107; TEWaters=0.027449; TierReaches=0.066313; TierTerrestrial=0.074383; Total=1.241071; Trout=0.038401

**VaFWIS - Department of Game and Inland Fisheries**

38,26,37.6 -77,30,47.2 **is the Search Point**

Submit | Cancel

**Search Point**

- **Change** to "clicked" map point
- **Fixed** at 38,26,37.6 - 77,30,47.2

**Show Position Rings**

Yes No

1 mile and 1/4 mile at the **Search Point**

**Show Search Area**

Yes No

2 Search distance miles radius

**Search Point** is at map center

**Base Map** Choices

Topography

**Map Overlay** Choices

Current List: Position, Search

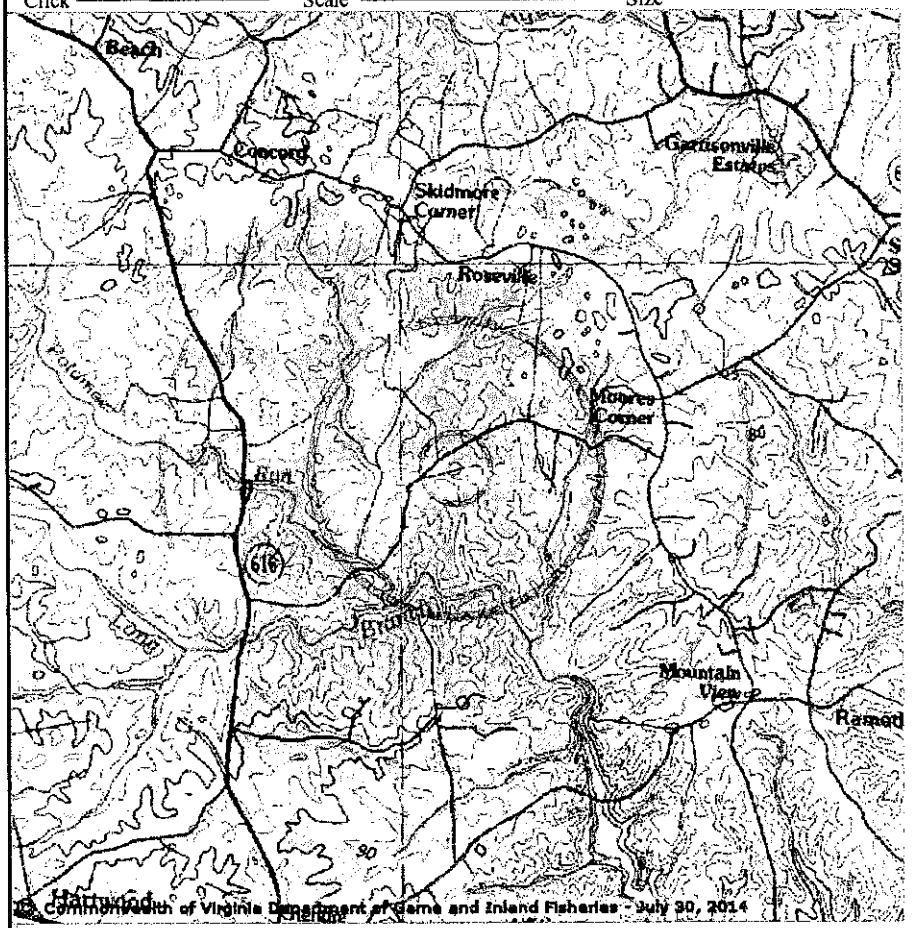
**Map Overlay Legend**

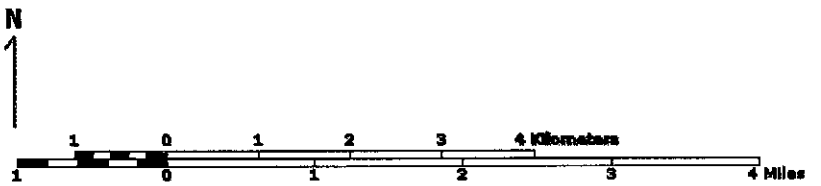
**Position Rings 1 mile and 1/4 mile at the Search Point**

**2 mile radius Search Area**

Refresh Browser Page

Map Click: Pan | Map Scale: In Zoom Out | Screen Size: Small Size Big | Help




Point of Search 38,26,37.6 -77,30,47.2

Map Location 38,26,37.6 -77,30,47.2

Select **Coordinate System:**

- Degrees,Minutes,Seconds Latitude - Longitude
- Decimal Degrees Latitude - Longitude
- Meters UTM NAD83 East North Zone
- Meters UTM NAD27 East North Zone

Base Map source: USGS 1:100,000 topographic maps (see Microsoft terraserver-usa.com for details)

Map projection is UTM Zone 18 NAD 1983 with left 275878 and top 4262847. Pixel size is 16 meters . Coordinates displayed are Degrees, Minutes, Seconds North and West.Map is currently displayed as 600 columns by 600 rows for a total of 360000 pixles. The map display represents 9600 meters east to west by 9600 meters north to south for a total of 92.1 square kilometers. The map display represents 31501 feet east to west by 31501 feet north to south for a total of 35.5 square miles.

Topographic maps and Black and white aerial photography for year 1990+-

are from the United States Department of the Interior, United States Geological Survey.
Color aerial photography aquired 2002 is from Virginia Base Mapping Program, Virginia Geographic Information Network.
Shaded topographic maps are from TOPO! ©2006 National Geographic http://www.national.geographic.com/topo
All other map products are from the Commonwealth of Virginia Department of Game and Inland Fisheries.

map assembled 2014-07-30 08:46:59 (qa/qc December 5, 2012 8:04 - tn=572887 dist=3218 I )
$poi=38.4437777-77.5131111

Molly Joseph Ward
Secretary of Natural Resources

Clyde E. Cristman
Director

Joe Elton
Deputy Director of Operations

Rochelle Altholz
Deputy Director of Administration
and Finance

# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF CONSERVATION AND RECREATION

600 East Main Street, 24th Floor
Richmond, Virginia 23219
(804)786-6124

MEMORANDUM

DATE: August 25, 2014

TO: Susan Mackert, DEQ-NRO

FROM: Alli Baird, DCR-DNH

SUBJECT: VA0092452, Camp Red Arrow WWTP
Due August 30, 2014

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biotics Data System for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

Biotics documents the presence of natural heritage resources within two miles of the project area. However, due to the scope of the activity and the distance to the resources, we do not anticipate that this project will adversely impact these natural heritage resources.

DCR supports the use of uv disinfection and encourages the utilization of new technologies as they become available to improve water quality.

There are no State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the DCR, DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

New and updated information is continually added to Biotics. Please re-submit project information and map for an update on this natural heritage information if the scope of the project changes and/or six months has passed before it is utilized.

The Virginia Department of Game and Inland Fisheries (VDGIF) maintains a database of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters that may contain information not documented in this letter. Their database may be accessed from http://vafwis.org/fwis/ or contact Gladys Cason (804-367-0909 or Gladys.Cason@dgif.virginia.gov).



**Attachment 9**

Thank you for the opportunity to comment on this project.

DCR
Department of Conservation & Recreation
CONSERVING VIRGINIA'S NATURAL & RECREATIONAL RESOURCES

Web Project ID: WEB0000002350

Client Project Number: VA0092452

## *PROJECT INFORMATION*

TITLE: Camp Red Arrow WWTP

DESCRIPTION: The project is a reissuance of an existing municipal minor VPDES permit. The facility has a design flow of 0.005 MGD and utilizes UV disinfection.

EXISTING SITE CONDITIONS: Receiving stream is an unnamed tributary to Mountain Run.

QUADRANGLES: Storck

COUNTIES: Stafford

Latitude/Longitude (DMS): 38°26'37.6362"N / 77°30'47.748"W

Acreage: 9 acres

Comments: There is no mixing zone associated with this discharge.

## *REQUESTOR INFORMATION*

Priority: N | Tier Level: Tier II | Tax ID:

Contact Name: Susan Mackert

Company Name: Virginia DEQ

Address: 13901 Crown Court

City: Woodbridge | State: VA | Zip: 20112

Phone: (703) 583-3853 | Fax: (703) 583-3821 | Email: susan.mackert@deq.virginia.gov

| Conservation Site | Site Type | Brank | Acreage | Listed Species Presence |
|---|---|---|---|---|
| POTOMAC RUN UPSTREAM RT 616 SCU | SCU | B3 | 13 | NL |

Natural Heritage Screening Features within Search Radius

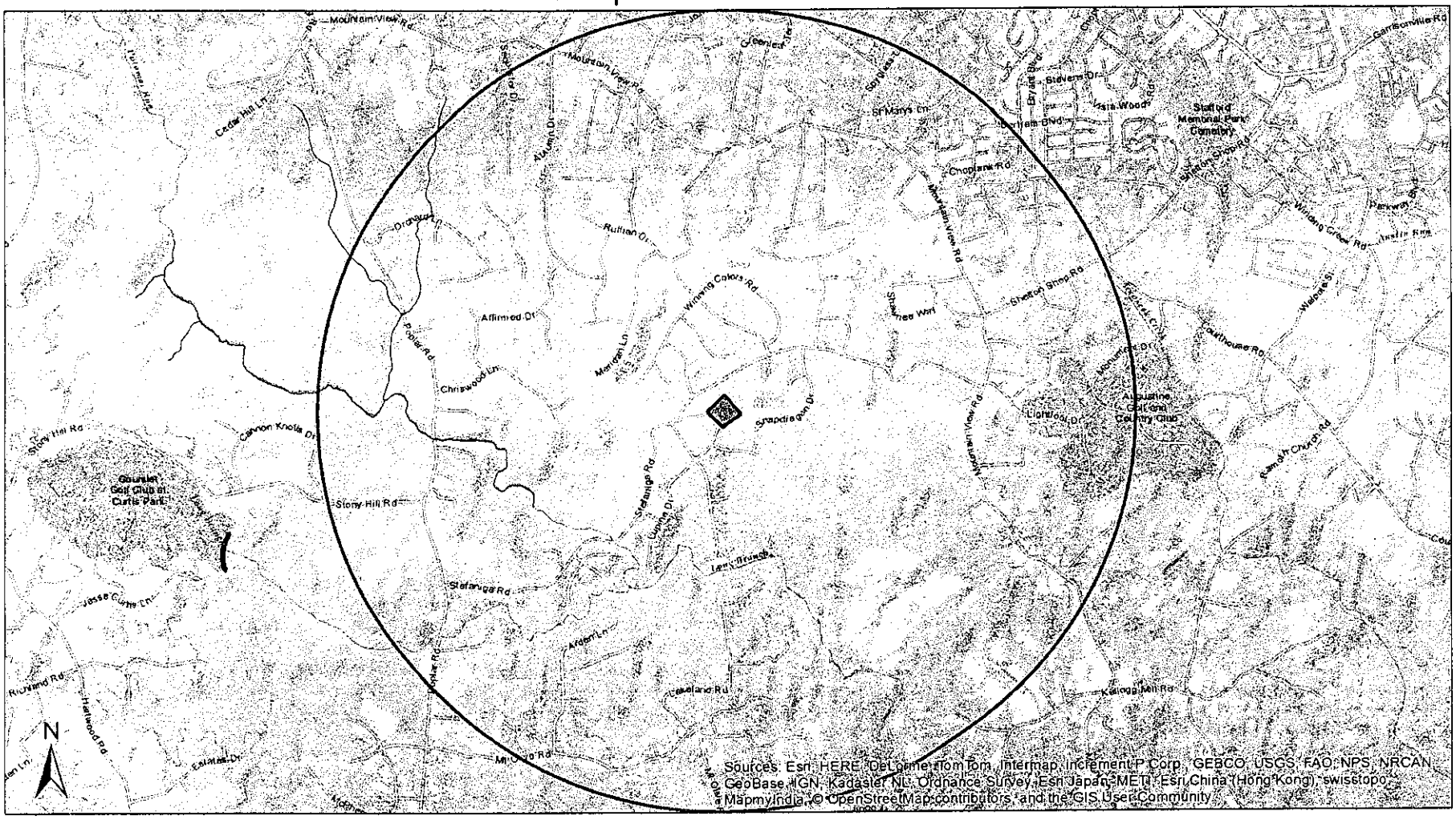
| Site Name | Group Name | Common Name | Scientific Name | GRANK | SRANK | Fed Status | State Status | EO Rank | Last Obs Date | Precision |
|---|---|---|---|---|---|---|---|---|---|---|
| POTOMAC RUN UPSTREAM RT 616 SCU | Natural Community | NP-Lower Potomac Second Order Stream | NP-Lower Potomac Second Order Stream | G2G3 | S2S3 | | | BC | | |

Natural Heritage Resources within Search Radius

Intersecting Predictive Models

Predictive Model Results

# Camp Red Arrow WWTP




Project Area
Buffered Project Area
NH Screening Features
Conservation Site
GLNHR
SCU

1:54,088

0 0.45 0.9 1.8 mi

0 0.75 1.5 3 km

Quads: Storck

Counties: Stafford

Company: Virginia DEQ

Lat/Long: 382637 / -773047

Molly Joseph Ward
Secretary of Natural Resources

Clyde E. Cristman
Director

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

The project mapped as part of this report has been searched against the Department of Conservation and Recreation's Biotics Data System for occurrences of natural heritage resources from the area indicated for this project. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in Biotics files, NATURAL HERITAGE RESOURCES HAVE BEEN DOCUMENTED within two miles of the indicated project boundaries and/or POTENTIAL HABITAT FOR NATURAL HERITAGE RESOURCES intersect the project area.

You have submitted this project to DCR for a more detailed review for potential impacts to natural heritage resources. DCR will review the submitted project to identify the specific natural heritage resources in the vicinity of the proposed project. Using the expertise of our biologists, DCR will evaluate whether your specific project is likely to impact these resources, and if so how. DCR's response will indicate whether any negative impacts are likely and, if so, make recommendations to avoid, minimize and/or mitigate these impacts. If the potential negative impacts are to species that are state- or federally-listed as threatened or endangered, DCR will also recommend coordination with the appropriate regulatory agencies: the Virginia Department of Game and Inland Fisheries for state-listed animals, the Virginia Department of Agriculture and Consumer Services for state-listed plants and insects, and the United States Fish and Wildlife Service for federally listed plants and animals. If your project is expected to have positive impacts we will report those to you with recommendations for enhancing these benefits.

**There will be a charge for this service for "for profit companies": $60, plus an additional charge of $35 for 1-5 occurrences and $60 for 6 or more occurrences.**

Please allow up to 30 days for a response, unless you requested a priority response (in 5 business days) at an additional surcharge of $500. An invoice will be provided with your response.

We will review the project based on the information you included in the Project Info submittal form, which is included in this report. Also any additional information including photographs, survey documents, etc. attached during the project submittal process and/or sent via email referencing the project title (from the first page of this report).

Thank you for submitting your project for review to the Virginia Natural Heritage Program through the NH Data Explorer. Should you have any questions or concerns about DCR, the Data Explorer, or this report, please contact the Natural Heritage Project Review Unit at 804-371-2708.

## Thompson, Alison (DEQ)

**From:** Aschenbach, Ernie (DGIF)
**Sent:** Tuesday, October 07, 2014 3:16 PM
**To:** Thompson, Alison (DEQ); Daub, Elleanore (DEQ)
**Cc:** ProjectReview (DGIF); Cason, Gladys (DGIF)
**Subject:** ESSLog 35025; VPDES permit re-issuance DEQ# VA-0092452 for the Camp Red Arrow WWTP in Culpeper County, VA

We have reviewed the VPDES permit re-issuance DEQ# VA-0092452 for the Camp Red Arrow WWTP in Culpeper County, VA. According to the application, the discharge (flow) is 0.0055 million gallons per day (MGD). The receiving water is an unnamed tributary to Mountain Run.

Provided adherence to the effluent characteristics and permit conditions, we do not anticipate the reissuance of this permit to result in adverse impact to resources under our purview.

Thanks.

Ernie Aschenbach
Environmental Services Biologist
Virginia Dept. of Game and Inland Fisheries
P.O. Box 11104
4010 West Broad Street
Richmond, VA 23230
Phone: (804) 367-2733
FAX: (804) 367-2427
Email: Ernie.Aschenbach@dgif.virginia.gov

**Thompson, Alison (DEQ)**

**From:** Hillman, Brett [brett_hillman@fws.gov]
**Sent:** Thursday, August 14, 2014 9:51 AM
**To:** Thompson, Alison (DEQ)
**Cc:** ProjectReview (DGIF); nhreview (DCR)
**Subject:** Camp Red Arrow WWTP VA0092452 - USFWS Comments

Hi Alison,

Thanks again for providing us with the materials necessary to review this permit reissuance. We took a close look at this one because a federally listed endangered mussel species, the dwarf wedgemussel (*Alasmidonta heterodon*) was historically known to occur in Mountain Run where it meets this facility's receiving stream, an unnamed tributary. Although this species has not been observed recently, it is possible that a population still exists. Therefore, we recommend that the 2013 EPA ammonia criteria be used to determine ammonia limits for this discharge. Although these criteria have not yet been adopted into the Virginia Water Quality Standards, they are more stringent than the current ammonia criteria and are believed to be protective of freshwater mussels.

Thanks again and please let me know if you have any questions.

Best regards,
Brett

***Brett Hillman***
***Fish and Wildlife Biologist***
*U.S. Fish & Wildlife Service*
*Virginia Field Office*
*6669 Short Lane*
*Gloucester, VA 23061*

*Phone: 804-824-2420*
*Fax: 804-693-9032*
*Email: brett_hillman@fws.gov*

11/25/2014 9:35:28 AM

Facility = Camp Red Arrow WWTP
Chemical = Ammonia as N
Chronic averaging period = 30
WLAa = 4.71
WLAc = 0.775
Q.L. = .2
# samples/mo. = 1
# samples/wk. = 1

Summary of Statistics:

# observations = 1
Expected Value = 9
Variance = 29.16
C.V. = 0.6
97th percentile daily values = 21.9007
97th percentile 4 day average = 14.9741
97th percentile 30 day average= 10.8544
# < Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 1.56369432239764
Average Weekly limit = 1.56369432239764
Average Monthly LImit = 1.56369432239764

The data are:

9

# CHESAPEAKE BAY NUTRIENT OFFSET AGREEMENT

This Chesapeake Bay Nutrient Offset Agreement (this "Agreement") is made this 5th day of December, 2012, by and between Children's Bible Ministries of Virginia, and the County of Culpeper ("Culpeper"), (each a "Party" and collectively the "Parties").

## BACKGROUND

A. To address public health and environmental concerns associated with a sewage lagoon system, Children's Bible Ministries of Virginia designed and constructed a new municipal wastewater treatment plant (the "Camp Red Arrow Wastewater Treatment Plant").

B. The Virginia Department of Environmental Quality ("DEQ") has issued the necessary Virginia Pollutant Discharge Elimination System ("VPDES") Permit for the Camp Red Arrow Wastewater Treatment Plant. The Camp Red Arrow Wastewater Treatment Plant is also subject to the General Virginia Pollutant Discharge Elimination System Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Bay Watershed in Virginia, 9 VAC 25-820, issued by the State Water Control Board and DEQ effective January 1, 2007, as hereafter modified or reissued from time to time (the "Watershed General Permit").

C. Pursuant to the above-referenced permits, DEQ has required Children's Bible Ministries of Virginia to offset the Camp Red Arrow Wastewater Treatment Plant's anticipated discharge of the nutrients total nitrogen ("Nitrogen") and total phosphorus ("Phosphorus"). Children's Bible Ministries of Virginia has determined they need to obtain an offset in the amount of 78 pounds per year nitrogen and 10 pounds per year phosphorous.

D. In 2005, the State Water Control Board adopted amendments to its Water Quality Management Planning Regulation, 9 VAC 25-720, to establish Nitrogen and Phosphorus wasteload allocations for all then-existing significant wastewater treatment plants in the Chesapeake Bay watershed, including Culpeper's Clevengers Wastewater Treatment Plant.

E. Culpeper's plant is also subject to the Watershed General Permit. In accordance with Watershed General Permit, 9 VAC 25-820-70, Part I B 2, Culpeper has elected to aggregate its Nitrogen and Phosphorus allocations. The aggregated Nitrogen and Phosphorus allocations are hereinafter referred to as the "Culpeper Nitrogen and Phosphorus Allocations".

F. Due to exceptional performance, Culpeper has achieved compliance with the Culpeper Nitrogen and Phosphorus Allocations well in advance of the generally applicable regulatory compliance deadline of January 1, 2011 under the Watershed General Permit. Because Culpeper's plant currently discharge less Nitrogen and Phosphorus than allowed under Culpeper's Nitrogen and Phosphorus Allocations, Culpeper currently has the ability to provide Nitrogen and Phosphorus offsets on a temporary basis sufficient to meet the offset requirements applicable to the new Camp Red Arrow Wastewater Treatment Plant.

G. Pursuant to Code of Virginia section 62.1-44.19;12 *et seq.*, 9 VAC 25-720-40 A, and 9 VAC 25-820-70, Part II B 1 a, Culpeper is authorized to transfer in its discretion, and Children's Bible Ministries of Virginia is authorized to acquire, a portion of Culpeper's Nitrogen and Phosphorus Allocations to satisfy Children's Bible Ministries of Virginia's offset obligation under the Watershed General Permit.

H. Based on Culpeper's early Watershed General Permit compliance and exceptional Nitrogen and Phosphorus treatment, DEQ recommended Culpeper to Children's Bible Ministries of Virginia as a potential source of Nitrogen and Phosphorus offsets. Accordingly, in June 2012, Children's Bible Ministries of Virginia requested Culpeper to provide Nitrogen and Phosphorus allocations in the amount of 88 pounds per year for a five-year period.

I. DEQ confirmed that Culpeper would retain its full Nitrogen and Phosphorus allocations following the term of an offset agreement, and DEQ expressed its appreciation for Culpeper's leadership and partnership in the Chesapeake Bay cleanup program.

## AGREEMENT

In consideration of the mutual covenant and conditions herein, and for good and valuable consideration, the receipt and sufficient of which the Parties hereby acknowledge, the Parties agree as follows:

1. Temporary Offset Allocation. Beginning for the compliance year which starts January 1, 2013 and for each compliance year thereafter through and including compliance year 2017 (ending December 31, 2017), Culpeper hereby transfers from Culpeper's Nitrogen and Phosphorus Allocations to Children's Bible Ministries of Virginia, and Children's Bible Ministries of Virginia hereby accepts, a temporary allocations of 78 pounds per year of Nitrogen and 10 pounds per year of Phosphorus (the "Offset Allocations"). Culpeper shall have no obligation to extend the availability of the Offset Allocations beyond compliance year 2016, but may elect to do so in its discretion following a request for such an extension from Children's Bible Ministries of Virginia. Any such extension shall be in writing as an amendment to this Agreement pursuant to Paragraph 18 below. Notwithstanding the other provisions of this Paragraph 1, this Agreement and the Offset Allocations transfer are expressly contingent upon the continued ability of Culpeper to provide the Offset Allocations under actual operating conditions and current laws and regulations including without limitation Culpeper's Nitrogen and Phosphorus Allocations. If, by any order, law, regulation, local legal obligations or requirements, facility operating conditions, or any changes thereto such ability were to cease, Culpeper's obligation to provide the Offset Allocations shall cease and this Agreement shall be renegotiated as provided in Paragraph 17.

2. Offset Allocation Price and Payment. The price for the Offset Allocations under this Agreement, which is based on the current Class A Credit price of the Virginia Nutrient Credit Association, Inc. (the "Nutrient Exchange"), is $6.00 per pound per year for a total annual cost of $528.00. Without issuance of an invoice by Culpeper, Children's Bible Ministries of Virginia shall pay such annual amount by each January 31 immediately following the end of the compliance year. For example, the annual payment for the first compliance year (2012) shall be

paid no later than January 31, 2013. Payment shall be in the form of a check made payable to "County of Culpeper" and delivered to Culpeper County Department of Environmental Services, ATTN: Director of Environmental Services, 118 W. Davis Street, Suite 101, Culpeper, VA 22701.

3. Limitation on Use of Offset Allocations. Children's Bible Ministries of Virginia agrees that its sole and limited use of the Offset Allocations shall be to offset Nitrogen and Phosphorus discharges from the Camp Red Arrow Wastewater Treatment Plant under the Watershed General Permit and that it shall not transfer any portion of the Offset Allocations to any other person or entity. In the event that operations of the Camp Red Arrow Wastewater Treatment Plant for any compliance year generate Nitrogen or Phosphorus credits within the meaning for the Watershed General Permit as a result of discharging less Nitrogen or Phosphorus than the sum of the Offset Allocations (and any other Nitrogen and Phosphorus allocations to which Children's Bible Ministries of Virginia may be entitled, if any), Children's Bible Ministries of Virginia shall transfer such Nitrogen and Phosphorus credits, up to 88 pounds per year, to Culpeper for Culpeper's use or exchange for that compliance year. Any such credit transfer shall be without cost to Culpeper.

4. Children's Bible Ministries of Virginia's Watershed General Permit Registration. By December 15, 2012, or as soon as practical thereafter, Children's Bible Ministries of Virginia shall file a registration statement for the Camp Red Arrow Wastewater Treatment Plant with DEQ under the provisions of the Watershed General Permit. Any offset plan submitted by Children's Bible Ministries of Virginia to DEQ shall be consistent with the provisions of this Agreement, including but not limited to the temporary nature of the Offset Allocations. Children's Bible Ministries of Virginia shall submit to Culpeper a draft of its registration statement and offset plan for Culpeper's review and approval before submittal to DEQ. Culpeper's review and approval shall not be unreasonably delayed or conditioned.

5. Culpeper's Compliance Plan Modification. Culpeper is not a member of the Nutrient Exchange or a participant in its Exchange Compliance Plan. During the next annual update of Culpeper's Compliance Plan due to DEQ on or before January 1, 2013, Culpeper shall (a) modify such plan with respect to the Culpeper Nitrogen and Phosphorus Allocations to make appropriate revisions consistent with the temporary Offset Allocations provided under this Agreement and (b) submit such modification to DEQ for approval.

6. Regulatory Approval. Culpeper shall bear no responsibility for the failure of DEQ to approve Culpeper's Compliance Plan as modified in the manner contemplated by this Agreement or for any other permits or approvals necessary for the accomplishment or completion of the Offset Allocations transfer under this Agreement.

7. Mutual Cooperation. Subject to Paragraph 6, the Parties shall continue to cooperate with each other as reasonably necessary to confirm or bring about the transfer of the Offset Allocations to Children's Bible Ministries of Virginia as provided herein.

8. Term. This Agreement shall be in effect once executed by both parties and shall expire on December 31, 2017. Notwithstanding the preceding sentence, if either Party fails to

perform a material obligation hereunder, and fails to cure such failure to perform within sixty (60) days of written notice from the non-defaulting Party, the non-defaulting Party may terminate this Agreement upon written notice to the other Party.

9. Authorization. Each Party represents that its execution, delivery and performance under this Agreement have been duly authorized by all necessary action on its behalf, and do not and will not violate any provision of its charter or other governing legal requirements, or result in a material breach of or constitute a material default under any agreement, indenture or instrument of which it is a party or by which it or its properties may be bound or affected. To each Party's knowledge there are no actions, suits or proceedings, pending or threatened against such Party or any of its properties, before any court or governmental authority that, if determined adversely to such Party, would have a material adverse effect on the transactions contemplated by this Agreement.

10. No Third Party Beneficiaries. This Agreement is solely for the benefit of the Parties hereto and their permitted successors and assignees and shall not confer any rights or benefits on any other person.

11. No Assignment. This Agreement, and the rights and obligations hereunder, shall inure to the benefit of and shall be binding upon any successors of such Parties. Children's Bible Ministries of Virginia may not transfer or assign this Agreement, or its rights or obligations hereunder, without the prior written consent of Culpeper, which consent may be withheld in Culpeper's discretion.

12. Brokerage Commissions. The Parties represent and warrant to each other that they have not dealt with any business broker or agent who would be entitled to a brokerage commission or finder's fees as a result of this Agreement or any related transactions. Each Party agrees, to the extent permitted under law and without waiving sovereign immunity, to indemnify and hold the other harmless from any and all claims for commissions of brokers or finder's fees claimed by, through or under the indemnifying Party, including any direct losses related to any such claim.

13. Notices. All notices, request, demands, claims and other communications hereunder shall be in writing, shall be delivered in person or by mail (first class, postage pre-paid) or overnight delivery, and shall be deemed given when delivered in person or, if not delivered in person, when received (or delivery is refused) by the Party to whom such notice, request, demand, claim or other communication is directed, at the following address, or at such other address as a Party shall designate by written notice to the other Party.

If to Children's Bible Ministries of Virginia :

Mr. Thomas Burnett
Director
Children's Bible Ministries of Virginia
578 Covered Bridge Drive
Madison, VA 22727

If to Culpeper:

County of Culpeper
ATTN: County Administrator
302 N. Main Street
Culpeper, VA 22701

with a copy by first class mail to:

Culpeper County Attorney
306 N. Main Street
Culpeper, VA 22701

15. Governing Law; Venue; Severability. This Agreement shall be construed in accordance with and governed for all purposes by the laws of the Commonwealth of Virginia. In the event of any dispute concerning this Agreement that the Parties are unable to settle informally, exclusive venue for any legal action shall be the Circuit Court for the County of Culpeper. If ay word or provision of this Agreement as applied to any Party or to any circumstance is adjudged by a court to be invalid or unenforceable, the same shall in no way affect any other circumstance or the validity or enforceability of any other word or provision.

16. No Waiver. Neither any failure to exercise or any delay in exercising any right, power or privilege under this Agreement by either Party shall operate as a waiver, nor shall any single or partial exercise of any right, power or privilege hereunder preclude the exercise of any other right, power or privilege. No waiver of any breach of any provision shall be deemed to be a waiver of any preceding or succeeding breach of the same or any other provision, nor shall any waive be implied from any course of dealing.

17. Change in Law. In the event of any material change in applicable laws or regulations, the Parties shall work together to amend this Agreement to conform to such change, while maintaining as closely as practical the provisions and intent of this Agreement. If in the event of any such material change Culpeper is unable to transfer the Offset Allocations as provided herein, Culpeper shall have no further obligation under this Agreement and Children's Bible Ministries of Virginia shall be solely responsible for otherwise meeting its offset requirement and complying with the Watershed General Permit.

18. Entire Agreement; Amendments. This Agreement contains the entire agreement between the Parties as to the subject matter hereof and supersedes all previous written and oral

negotiations, commitments, proposals and writings. No amendments may be made to this Agreement except by a writing signed by both Parties.

19. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument.

IN WITNESS WHEREOF, the Parties hereto have caused the execution of this Agreement.

**CHILDREN'S BIBLE MINISTRIES OF VA**

BY: _____
Name: Mr. Thomas Burnett
Title: Director
Children's Bible Ministries of Virginia

Attest:
By: _____
Name: DIR OF ENVS SERVICES
Title: PAUL HOWARD JR.

**COUNTY OF CULPEPER**

By: _____
Name: William C. Chase Jr.
Title: Chairman,
Culpeper County Board of Supervisors

Attest:
By: _____
Name: FRANK T. BOSSO
Title: COUNTY ADMINISTRATOR

Approved as to form:
By: _____
Name: SANDRA R. ROBINSON
Title: COUNTY ATTORNEY

Public Notice – Environmental Permit

PURPOSE OF NOTICE: To seek public comment on a draft permit from the Department of Environmental Quality that will allow the release of treated wastewater into a water body in Culpeper County, Virginia.

PUBLIC COMMENT PERIOD: February 11, 2015, to March 13, 2015

PERMIT NAME: Virginia Pollutant Discharge Elimination System Permit –Wastewater issued by DEQ, under the authority of the State Water Control Board

APPLICANT NAME, ADDRESS AND PERMIT NUMBER: Children's Bible Ministries of Virginia, Inc., 22338 Arrowhead Trail, Stevensburg, VA 22741, VA0092452

NAME AND ADDRESS OF FACILITY: Camp Red Arrow, 22338 Arrowhead Trail, Stevensburg, VA 22741, VA0092452

PROJECT DESCRIPTION: Children's Bible Ministries of Virginia, Inc. has applied for a reissuance of a permit for the private Camp Red Arrow. The applicant proposes to release treated sewage wastewaters from a bible camp at a rate of 0.0055 million gallons per day into a water body. The sludge will be disposed by pump and haul to an approved facility. The facility proposes to release the treated sewage in the Mountain Run, UT, in Culpeper County in the Rappahannock watershed. A watershed is the land area drained by a river and its incoming streams. The permit will limit the following pollutants to amounts that protect water quality: pH, CBOD, Total Suspended Solids, Total Kjeldahl Nitrogen, E. coli, and Dissolved Oxygen. Monitoring is included for Total Nitrogen, Nitrate+Nitrite, and Total Phosphorus.

This facility is subject to the requirements of 9 VAC 25-820 and has registered for coverage under the General VPDES Watershed Permit Regulation for Total Nitrogen and Total Phosphorus Discharges and Nutrient Trading in the Chesapeake Watershed in Virginia.

HOW TO COMMENT AND/OR REQUEST A PUBLIC HEARING: DEQ accepts comments and requests for public hearing by hand-delivery, e-mail, fax or postal mail. All comments and requests must be in writing and be received by DEQ during the comment period. Submittals must include the names, mailing addresses and telephone numbers of the commenter/requester and of all persons represented by the commenter/requester. A request for public hearing must also include: 1) The reason why a public hearing is requested. 2) A brief, informal statement regarding the nature and extent of the interest of the requester or of those represented by the requester, including how and to what extent such interest would be directly and adversely affected by the permit. 3) Specific references, where possible, to terms and conditions of the permit with suggested revisions. A public hearing may be held, including another comment period, if public response is significant, based on individual requests for a public hearing, and there are substantial, disputed issues relevant to the permit.

CONTACT FOR PUBLIC COMMENTS, DOCUMENT REQUESTS AND ADDITIONAL INFORMATION: The public may review the draft permit and application at the DEQ-Northern Regional Office by appointment, or may request electronic copies of the draft permit and fact sheet.
Name: Alison Thompson
Address: DEQ-Northern Regional Office, 13901 Crown Court, Woodbridge, VA 22193
Phone: (703) 583-3834 E-mail: Alison.Thompson@deq.virginia.gov Fax: (703) 583-3821